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CLINICAL PEDIATRICS

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INTRODUCTION

To write this brief introduction has been more of a pleasure than a task. I am convinced that a treatise of this nature, summarizing, as it does, the essentials of the various diseases and conditions met with in the practice of pediatrics, giving particular attention to the newer methods of diagnosis and therapy, and presenting the subjects in a succinct, comprehensive manner, is of real practical benefit. The general practitioner and the post-graduate student, especially, will find it a compendium of considerable value.

Henry Heiman, M.D.



PREFACE

The object of this work is to give the student and general practitioner a brief review of the most common conditions and diseases found in infancy and childhood, as an aid in diagnosis.

It is both tedious and confusing to go through an exhaustive and voluminous book on the subject, and a description of diseases from a clinical and practical standpoint only may be found useful.

To become a good diagnostician, one must be familiar with the cardinal symptoms of conditions found in every-day practice. With this idea in view, I have endeavored to make this work as brief and concise as possible.

My information is derived from recognized textbooks, current literature, personal experience and judgment.

I might add, that in omitting the mention of the rarer conditions and less important classifications, I have done so with a view of facilitating the formation of memory pictures of the more common groups of diseases.



CLINICAL PEDIATRICS

BIRTH INJURIES

Caput succedaneum: Œdema, subcutaneous and subaponeurotic hemorrhage, due to pressure on the head during labor.

Similar condition may be found over the gluteal

region following breech presentation.

Cephalæmatoma: Hemorrhage is subperiosteal. It is usually accompanied by caput succedaneum. Attains its largest size at the end of a week. Found over one of the parietal bones. Never extends beyond the sutures, as the pericranium is attached there. In the course of healing, bone tissue at surrounding border makes the central part appear like a depressed fracture.

Differentiated from a meningocele by the fact that the latter swells when the child cries, and is located over the sutures.

Treatment: Protection from injury. Incision only when extremely large or suppurating.

Hæmatoma of the sterno-cleido-mastoid muscle: This condition appears within a few days after child-birth. It appears as a hard mass, the size of a hazelnut, in the central portion of the muscle. It is due to a laceration of some of the muscle fibres. When the

muscle is relaxed, it is movable. The head may be turned to the healthy side, and sometimes to the affected side. It is usually painless and disappears spontaneously.

Treatment: Gentle massage, and passive motion.

OBSTETRICAL PARALYSES

The Erb-Duchenne Type occurs most frequently. It is due to injury of the brachial plexus; particularly the 5th and 6th cervical nerves. The arm is turned in, and the forearm is turned out. Supination is impossible. Sometimes the sensory nerves on the inner surface are affected. Soon after birth it is noticed that the child cannot raise its arm at the shoulder, or flex its forearm at the elbow. The muscles affected are: Deltoid, biceps, infraspinatus, supinator longus, and supinator brevis.

The Klumpke Type: In this form the 7th and 8th nerves are involved in conjunction with the upper cervical nerves. This results in paralysis of all the muscles of the upper extremity with extensive sensory involvement. Especially characteristic is the oculo-pupillary reflex. This consists of a narrowing of the palpebral aperture, with contracted pupil, caused by an affection of the sympathetic nerve. The pupils react to light.

Diagnosis: Fracture of the clavicle and scapula and separation of the epiphysis of the humerus may be definitely ascertained by the X-ray. We must also exclude congenital peripheral paralyses, and pseudoparalysis syphilitica (Parrot's disease). In cerebral paralysis, we find a different distribution of the paralysis, as well as increased muscular tone in the muscles affected, also increased reflexes.

Prognosis: Mild cases usually get well. Severe cases may be followed by paralysis and contractures.

Treatment: Massage, Faradic and Galvanic current.

Mastitis: Almost every new-born baby shows some swelling of the mammary gland, which appears on the second or third day and gradually increases in size until about the tenth day. Upon pressure of the gland, usually a drop of milk exudes. Sometimes we get an inflammation of the gland, which may result in suppuration.

Treatment: Wet dressing, or incision and drainage, if found necessary.

Icterus neonatorum: This is a form of jaundice, which appears on the first to the fourth day after birth. It is of varying intensity. It takes six days to three weeks for the jaundice to disappear. The liver and spleen are normal. If the intensity of the jaundice increases during the second or third week, then it is due to sepsis, or congenital obliteration of the bile duct. In the latter condition, the urine shows the presence and the stools the absence of bile.

Icterus is more intense in premature babies.

No treatment is required.

Hernia of the umbilical cord (congenital umbilical hernia): In the sixth to the tenth week of fœtal life, the cord contains loops of the intestines, which are subsequently drawn in. Sometimes the opening persists, and the proximal portion of the cord contains loops of the intestines and other organs. The sac is formed by the peritoneum and the amniotic membrane. The hernia appears as a swelling, egg- or pear-shaped,

and varying in size from that of a chestnut to that of a child's head.

This hernia should be operated without delay.

Persistent omphalomesenteric duct (Meckel's Diverticulum): This duct should be obliterated in the second month of fœtal life. It leads from the yolk to the intestines. Sometimes it fails to become obliterated, and causes the formation of a fistula between the intestines and the umbilicus. Prolapse of the mucous membrane gives it the appearance of a soft velvety tumor surmounted by the opening of the fistula. This fistula may be probed and discharges a cloudy fluid, coming from the intestinal tract. It may be differentiated from the urachus fistula, by the direction of the canal.

Treatment: Palliative—Touching the fistulous tract with silver nitrate stick, or actual cautery. Radical—Excision of Meckel's diverticulum.

Urachus fistula: The stalk of the allantois, which extends from the umbilicus to the bladder, should become obliterated during the second month of fœtal life. Sometimes, however, it remains patent, resulting in the presence of a fistulous tract.

The external appearance is very much the same as the omphalomesenteric fistula. Probing will show the communication with the bladder. The fistula discharges urine.

Treatment: Cautery, or operation.

DISEASES OF THE UMBILICUS

Gangrene: This occurs when the cord refuses to mummify. There is great danger of infection. Treat by actual cautery.

Infection of the Umbilicus: In the course of separation of the cord, the umbilicus may be a portal of entry for infection. The infection may be local or general.

Catarrhal omphalitis: This is manifested by a mucopurulent discharge. Treatment: Application of silver nitrate solution 1—5%, or continuous wet dressing.

Acute umbilical cellulitis: Redness, swelling and suppuration. Treatment: Wet dressing with liqual luminii acetatis (dil. 10 times). When abscess formation is present, incision and drainage.

Arteritis or Phlebitis: The former is more common than the latter. There may be no external evidence of infection. Arteritis may be present without any symptoms except a slight rise in temperature and may be followed by complete recovery. Sometimes a fistulous opening may be found at the umbilicus, from which pus may be expressed. Care must be exercised in probing not to bring on a hemorrhage. The deeper portion of the artery may be affected, in which case probing will be negative. Severe cases may be followed by peritonitis and symptoms of septic and pyemic infection, including pleurisy, pneumonia, abscesses of or-

gans and meningitis, with increasing icterus and hemorrhage from the umbilicus and organs. Phlebitis is recognized by symptoms of sepsis. It is less frequent and more unfavorable than arteritis. It occurs in feeble children. No pus can be expressed from the umbilicus. It may be complicated by erysipelas and umbilical gangrene. Phlebitis is usually fatal. Treatment is of very little avail.

Granuloma of the umbilicus: This is simply "proud flesh," caused by infection, in the course of healing. It has a raspberry appearance and may be sessile, or pedunculated.

Treatment: The easiest method is to tie off the growth with sterile silk or iodine catgut. It may be excised with a pair of scissors, touching the base with a silver nitrate stick.

Hemorrhage from the Umbilicus: This may be arterial, venous, or parenchymatous. Slight bleeding during the first few days is of no consequence. Continuous bleeding during the second or third week, even parenchymatous, may result in death from exsanguination.

Hemorrhage may be a symptom of sepsis, syphilis, or rarely hæmophilia.

Treatment: Pressure; ligature; suture.

Umbilical hernia: Protrusion of the abdominal contents through the abdominal ring, causing a swelling of varying size, which can be reduced. Recovery is usually spontaneous. If it does not disappear during the first three years of life, operation is necessary.

Treatment: After reduction, draw the skin over the hernial opening in two lateral longitudinal folds. These may be held in place by two overlapping strips of Z. O.

plaster, 4 inches long and I inch wide. These may be changed in one or two weeks. Bathing does not remove the plaster, but it can be easily removed with benzene.

DISEASES OF THE NEWBORN

Tetanus neonatorum: Infection enters through the umbilicus. Symptoms appear during the second or third week. There is a slight rise in temperature, tonic spasm of the jaw muscles (trismus). Later these are followed by tonic spasms of muscles all over the body. Spasms are produced by the slightest irritation. The tonic contraction finally becomes constant, especially the trismus, causing risus sardonicus. Swallowing becomes impossible. Death comes after a few hours to a few days, and is caused by a spasm of the diaphragm, or exhaustion. Only 20% recover. Recovery is slow and takes a few weeks.

Diagnosis: It may be differentiated from cerebral hemorrhage, meningitis and encephalitis by lumbar puncture and absence of trismus. We must also think

of hydrocephalus and congenital diplegia.

Treatment: Solution of Ac. Carbolic 1/4% strength, dose 3i q. 2 h., hypodermatically, by mouth or rectum. Atropine Sulph 1/5000 gr. daily. We may also try Magnesium Sulph 8-10 gr., subcutaneously, frequently repeated.

Antitetanic serum is of value only when used before the development of the disease.

Feed as much as possible by mouth, or through a catheter, passed by the nasal route.

Erysipelas: This infection usually begins at the umbilicus, and spreads downward, rarely upward. The

main characteristics are: Redness with a definite border, induration, formation of blebs, sometimes gangrene and rarely a phlegmonous process. Temperature may be normal or high. The disease is usually fatal. Prognosis is better in older children.

Treatment: Paint Tr Iodine along the border line of the redness, then use a wet dressing of Liq Aluminii Acetatis 50% strength.

The following is a good ointment:

Ichthyol 5ss Pot. Iodide grxv Pulv. Belladonna Fol grxv Lanoline 3i

Vaccines (autogenous, or polyvalent) have so far proved of little value.

Internal medication of carbolic acid ¼% Sol. 5ss-i q. 2 or 3 h. is safer than is generally believed.

Ophthalmia neonatorum: Conjunctival mucous membrane becomes infected in the course of parturition. The inflammation may be simple, or gonor-rhœal.

The latter is more intense. There is more discharge, which is thick and greenish yellow. In the gonor-rheal form there is also a marked cedema of the lids. It may spread to the cornea and cause perforation. The simple blenorrhea is mild and usually gets well in a few days if treated properly. The gonorrheal form usually lasts two to four weeks. In rare cases arthritis will develop as a complication. Still more rarely, stomatitis may develop.

A pneumococcus infection may be quite severe, but the cornea remains intact. Treatment: Prophylaxis—Crede's method, i. e., 2% silver instilled soon after delivery. When the disease is developed, keep the baby in a dark room and use ice-cold applications to the eyes. Douche the eyes with a 4% Boric acid sol., or 1/5000 Bichloride, as often as is necessary to keep the eye free from discharge. Once daily we may instil a drop of a 2% solution of silver nitrate, or 25% solution of argyrol.

Instead of argyrol we may use cresatin (metacresol), 25% in albolene once daily; until the discharge stops. Excellent results have been obtained (Barnert).

Sepsis in infancy: Infection may enter through the umbilicus, eyes, any abrasion of the skin, mouth, genitals, and gastrointestinal tract. There may be no characteristic symptoms, the first sign of sepsis being collapse. Then we may have cases that show symptoms of gastroenteritis only. Other cases may produce various clinical pictures, depending on the intensity of the infection, or the organs affected.

Thus we may have: high temperature, pallor, jaundice, hæmatemesis, hemorrhage from the bowels, kidneys, genitals and umbilicus, pneumonia, peritonitis, meningitis, suppuration of the parotid glands, suppuration of the joints, rarely osteomyelitis. We may also find multiple skin abscesses, sclerædema, and sometimes sclerema, especially in premature babies.

Buhl's disease: Probably a form of sepsis. It is usually found in babies who have had asphyxia. The temperature remains normal. The umbilicus appears normal except for a little subcutaneous hemorrhage around it. There may be vomiting of blood, blood in

the stools, cedema of the dependent parts of the body; asthenia and death is the usual outcome.

Pathological finding: a fatty degeneration of the organs. Epidemic hæmoglobinuria (Winckel's disease): This is another form of septic infection. The symptoms ap-

pear on the 4th to the 8th day after birth. The characteristic signs are: Icterus, cyanosis, hæmoglobinuria. Death usually follows after two days.

Treatment: Stimulation with Tr Digitalis (Mss-i): Caffeine sodium benzoate (grss), camphor (grss), given every 3 or 4 hours.

Open abscesses, wherever present. We may also give physiological saline solution of hypodermoclysis (4 oz. every 4 hours) or transfusion.

Colloidal silver (Gr iss) may also be given intravenously, or by rectum.

Melæna neonatorum: This term denotes hemorrhage from the intestinal tract in the newborn. The probable cause is weakening of the capillaries, through asphyxia, or the formation of ulcers on the mucous membrane of the stomach, or duodenum. Hemophilia may be excluded, as it does not occur during the first few months of life; it is also more frequent in the male and is hereditary. The other causes to be considered are: sepsis and syphilis. On the other hand, blood, sucked up from the mother's breast, may be swallowed and later vomited. Blood may also come from the baby's mouth or nose.

Tendency to bleed may last a few days or weeks.

Bleeding usually begins during the first few days and rarely after the twelfth day. Cases vary in intensity. The bad cases are fatal in one to three days. Treatment: This, as a rule, is of little avail. We may try hypodermoclysis with a 10% solution of Russian gelatin. Injection of horse serum and transfusion may be resorted to in desperate cases; or injection of coagulose (P. & D.) subcutaneously. Subcutaneous injection of fresh blood or human serum may be tried (4 c.c. at a time).

Prematurity: Causes.—Severe traumatism, too much exercise, insufficient exercise, poor nutrition of the mother, twin pregnancy. The most common diseases to cause prematurity are: syphilis, tuberculosis, nephritis, endocarditis, scarlet fever, typhoid pneumonia, chorea, intoxication, such as alcoholism, lead, phosphorus, mercury, or arsenic poisoning.

The average weights and length are as follow:

	We	Weight		Length	
6	months $2\frac{1}{2}$	1bs	.14	in.	
$6\frac{1}{2}$	months3	1bs	.15½	in.	
7	months $4\frac{1}{2}$	1bs	.161/2	in.	
71/2	months5	1bs	.17	in.	
8	months6	lbs	.181/2	in.	

Healthy premature children usually get on very well, and in later months almost equal full-term babies in size and development. Debilitated children do very poorly and remain below par for years. Prognosis is better in children that weigh 5 or 6 lbs. than those who weigh less. The functions of all the organs are sluggish. Thus, we have constipation, uric acid infarction, which may cause suppression of urine and colic.

Treatment: Heat and careful feeding. Heat may be supplied by the incubator, or hot water bottles. Only very small babies should be wrapped up in cotton

batting. Watch the baby, as there is danger of raising the temperature too high.

Feeding: Breast milk, whenever possible. This is imperative. Feed every two hours. The quantity given should be 1/5 of the body weight to 1/6 at full term per day. When we have to resort to artificial feeding, we may use cow's milk, pasteurized or peptonized. As to quantity used, we must be guided by the child's weight. The caloric requirement for 24 hours is 50 calories for each pound of weight. Thus a child weighing 5 lbs. should get 250 calories. Total quantity of fluid per day would have to be about 18 oz. (1/5 of the body weight). To get 6-7% sugar, we would have to use 1 oz. of milk sugar.

Total246 calories Add 12 oz. water to make up 18 oz. Divide into 9 bottles.

We cannot depend on calories to give us the exact quantity, as some babies stand more food than others. It is safer, therefore, to start them on smaller quantity and gradually increase.

Congenital asphyxia—Causes: Compression, or twisting of the cord, premature detachment of the placenta, abnormal cerebral pressure of the fœtus, premature efforts at respiration, maldevelopment of the heart and lungs, prematurity; on the mother's side: prolonged labor, hemorrhage, convulsions, ergot, death of the mother.

Symptoms: Cyanosis, varying from a livid color to

a deep blue. Skin is not irritable, and slapping does not bring on respiration. Heart action is weak and meconium flows out. The cord is flaccid and almost empty. The condition must be differentiated from cerebral hemorrhage, which is characterized by the following: history of forceps delivery, coma, possibly paralysis, bulging of the fontanelles. Severe hemorrhage, as from rupture of the cord, may simulate asphyxia.

Treatment: Turn the child upside down and spank. Hot bath at 110° F., followed by cold plunge at 68° F. Artificial respiration (swinging of Schultze, or artificial respiration of Dew). Expiratory movement must be made first. Inflation of the lungs, mouth to mouth (may distend the stomach). We may use catheter in the larynx, or Dræger pulmotor. Baby must be watched for 24 hours.

Atelectasis: This is a state of incomplete inflation of the lungs in the newborn. It usually affects the posterior portion of the lungs. The inflated portion is usually emphysematous. There may be cyanosis at birth from which the baby may never recover, or else the baby may die after a few hours, or days, in a feeble condition, or in convulsions. It may live for a few months, during which time it is prone to attacks of cyanosis, from which it may recover or die. The child is feeble, the cry is weak. Physical signs are not significant, except when one side only is affected, when, on comparing with the normal side, we find dullness and diminished, rough or bronchial breathing.

Treatment: Spanking, immersing in hot and cold water. Take baby up, do not let it lie in the crib all the time

Sclerædema: Premature children, with poor circulation, are predisposed to the condition, also infants with hereditary syphilis, or congenital heart disease. or sometimes nephritis. The affection occurs only in the newborn. The skin is pale, or bluish in color. The swelling begins on the back of the feet, or the face. mons Veneris, scrotum and penis, and then the cedema becomes general. The chest is not affected. The cedema is doughy and pits on pressure. Serous cavities are not affected. The urine may show a heavy sediment, but does not contain any albumen. The temperature is subnormal (may go down to 86°). The child gradually becomes weaker and sometimes gets convulsions. Death usually takes place after three days. Recovery is possible. Sometimes this disease is associated with sclerema.

Treatment: Warm baths, stimulation and careful feeding.

Sclerema: This may occur at any time during the first few months of life. Onset is similar to scleredema. The head and upper extremities are last involved. The genitals and soles of feet are free, as also are the palms of the hands.

At first the skin is doughy, but it soon becomes hard and board-like. The child gradually becomes stiff, as if frozen, is unable to take any nourishment, loses strength rapidly, may get convulsions. Death usually takes place in a state of coma after three or four days. Recovery is possible, but is very gradual.

Treatment: Avoid chilling of premature and atelectatic babies. Subcutaneous injection of a .3% solution of sodium chloride, twice daily; also enemata of normal saline solution.

Pemphigus, traumatic: May be brought on by hot baths.

Specific: Usually present at birth and does not appear later than two weeks after birth. Bullæ are present on the soles of the feet and palms of the hands. Other signs of syphilis are generally present.

Infectious form (Demme found diplococcus): The entire body may be covered with large vesicles (1/4 inch in diameter). The trunk is affected first. The vesicles may fuse and form large bullæ. Soles and palms are not affected. The affection appears on the third or fourth day after birth. The bullæ dry and form crusts, which upon shedding leave a red or violet surface.

Prognosis is usually good, unless the entire surface is covered.

Inanition fever: Starvation may cause a rise in temperature. The fever is usually not higher than 101-102° F., but may sometimes go up as high as 104°. Give water every two hours and attend to the feeding.

NUTRITION

Proteids: Build up tissue.

Fats: Save tissue and build up nerve and bone tissue.

Carbohydrates: Save tissue and make fat.

Salts: Phosphates of calcium and magnesium help in formation of bone.

Water: 90% of animal food. Acts as a diluent, helps digestion and excretion. In proportion, babies use six times as much water as adults.

Woman's milk: During the first two or three days after childbirth the breasts secrete a thick yellow fluid called colostrum. Sp. Gr. of this fluid is 1040, fat globules are uneven. Microscopical examination discloses the presence of large granular cells called colostrum cells. The colostrum coagulates to solid upon boiling. Its principal ingredients are:

Proteids 5	.70%
Sugar 3	.70
Fats 2	
Salts	.28
Water88	.00

Mother's milk is bluish in color and sweet. The fat globules are very fine; sometimes epithelial cells are present. Reaction is neutral or alkaline.

Quantity at one nursing:

Ist week $\frac{1}{2}$ - $\frac{1}{2}$ oz.	2nd month2-5 oz.
2nd weekI-3 oz.	3rd month $3-5\frac{1}{2}$ oz.
3rd week1½-4 oz.	4th month3-6 oz.
4th week $1\frac{1}{2}-4\frac{1}{2}$ oz.	5th month4- $6\frac{1}{2}$ oz.
7 17	6th month5-7 oz.

The increase in quantity taken is not always uniform. We often find that the baby will take less during the fourth month than during the third, and will not increase again until the sixth.

Composition of woman's milk:

Fats	4%
Sugar	7%
Proteids	11/2%
Salts	.20%
Water	87%

There is little change in quality of the milk after the 1st month.

Examination of breast milk: Full breasts are firm and hard. Poor breasts are soft and flabby. From a normal breast a child ought to get enough in 20 min. or less. The first part of the milk contains more proteids, and the last part more fats. To tell exactly the amount taken at each feeding, weigh the baby before and after the feeding. For examination, get all the milk that you can from one or both breasts.

The quantity of proteids is recognized by the Sp. Gr. The quantity of fats—allow milk to stand 24 hours; 5 parts of cream = 3 parts of fat.

High fats give a low Sp. Gr.; high proteids give a high Sp. Gr.

Condition affecting the mother's milk:

Age—Quality poor when too young or past 35 yrs. Illness—Poor milk

Menstruation—No constant effect.

Diet-Nitrogenous diet gives best milk.

Alcoholic malted drinks increase proteids and fats and quantity.

Simple nutritious diet is best.

Malt preparations may improve the quality of the milk.

Pregnancy affects the quality of the milk. The milk becomes poor.

Nervous impressions and shocks may change the character of the proteids and cause a toxic effect, with vomiting, undigested stools, fever and even convulsions.

Cow's milk: It should be fresh. Delivery should be made 12 hours after it is drawn. Milk should come from healthy cows, which have been subjected to the tuberculin test. The milk is better when it comes from a herd than from a single cow. Cleanliness should be practiced in milking. It should be bottled and kept at a temperature of 45° until used.

Composition:

Fats, 3.50 Sugar, 4.30 Proteids, 4.00 Sp. Gr. 10.28-10.33 Salts, .70 Water, 87.00

Reaction is neutral, or slightly acid.

Milk that has been skimmed may have a slightly higher Sp. Gr.

If the milk is too alkaline, something has been put in. Fats may be determined by Babcock's centrifugal machine. (After sulphuric acid acts on the proteids, fats are brought to the surface).

Cream is not reliable. Four parts of cream = 1 part of fat.

Cream: Upper 9 oz. of qt. bottle contain 12% of cream. Upper 16 oz. of qt. bottle contain 7% of cream.

Milk sterilization: This may be accomplished by boiling. Even after boiling, the milk is not free from germs, as some spores are very resistant. Boiled milk may remain standing at ordinary room temperature for a few days without souring. It is, however, unsafe to use, as injurious bacteria are apt to grow, owing to the fact that lactic acid bacilli are destroyed. The presence of lactic acid bacilli prevents the growth of injurious bacteria.

Pasteurization: Bottles are heated at a temperature of 167° in a water bath for ½ hour. We may obtain the same result by heating the milk in a parboiler until the milk begins to steam. Most of the pathogenic bacteria are thus destroyed. Cool off and keep in the ice-box.

Peptonized milk: To one pint of milk add 4 oz. of water and 15 gr. of bicarbonate of soda; 5 gr. of pancreatic ext., or 10 gr. of Fairchild's peptogenic milk powder are then added. Place in a water bath at a temperature of 105°-115° F. We get partial peptonization after 10 minutes. Bring then to a boil to arrest further fermentation. Taste is unchanged. Complete peptonization is obtained after two hours. This last product is bitter. This milk is given to babies with

poor digestive power. Do not continue for longer than a month; then gradually shorten the peptonizing process.

Condensed milk: Rich in sugar and poor in fat. We may use this when weaning, or when cow's milk does not agree with the baby. Use it in dilution of I-IO. Condensed milk should not be given as a permanent food.

Skimmed milk: This is obtained by decanting off the cream which collects at the top of the milk. It is used in cases of diarrhœa caused by seeming intolerance of the fat ingredient of cow's milk.

Buttermilk: Poor in fat and sugar. Contains lactic acid bacilli and is especially adapted in cases of diarrhœa. We may sweeten it by the addition of saccharin, I gr. to a quart.

Whey: Rich in salts and lactic acid, poor in proteids. May sometimes be tried in cases of poor digestion.

Beefjuice: Broil steak rare and express the juice with meat squeezer. Given as additional food after the 8th month and sometimes earlier. Quantity given at a feeding is $\frac{1}{2}$ to $2\frac{1}{2}$ oz.

Broth: No nutritional value; only stimulating, but is useful as a vehicle for bread, cereal and potatoes.

Barleywater: Prepared from Robinson's patent barley. Use one teaspoon to a tablespoon to a pint of water. Mix the barley in a cup of cold water, then add to boiling water; cook slowly for 10-15 min. It is used as a diluent and modifier of milk. The starch is, as a rule, digested after the third month.

INFANT FEEDING

- 1. Breast.
- 2. Partially breast.
- 3. Artificial.

Breast feeding: Nursing every 3 to 4 hours. Each nursing takes 5 to 20 minutes. If the child cries to remain longer than 20 min., it means that the milk is insufficient.

Care of breast: Wash nipples before and after feeding, keep breast covered with clean gauze between feedings.

Nursing during the first days: First day, every 8 hours. Second day, every 6 hours. Third day, every 4 hours. After that, every 3 to 4 hours.

It is best not to allow the baby to go longer than 4 hours during the day, but never arouse a baby for feeding at night. Usually the baby will get along with one feeding at night and some babies will sleep right through the night.

Nursing habits: Good ones are easily acquired. The tendency of the mother is to interpret every cry as that of hunger. Frequently a baby may, through overfeeding, suffer from indigestion, vomiting, colic, diarrhœa, and yet it continues at the breast every hour or two, thus adding insult to injury. It is a poor policy to nurse at intervals of less than three hours, as

nursing frequently at an empty breast will not help matters.

Inadequate nursing: Sometimes mother's milk is either insufficient in quantity or poor in quality. Determine quantity by weighing the baby before and after feeding. If the quantity is insufficient, the baby will cry immediately after feeding, or half an hour to an hour before feeding time it will have a tendency to suck its fingers and tug at the bedclothes. The other features are: no vomiting, small, constipated stools of normal color.

Treatment: Give water after each feeding; treat the mother. May have to give a supplemental feeding or get a wet-nurse. If the mother's milk is absolutely inadequate, and it is impossible to procure a wet-nurse, then we have to resort to artificial feeding.

Excessively rich milk, or too frequent, or too prolonged feedings: The child at first has frequent and undigested stools. Later, vomiting also develops.

Treatment: Lengthen intervals between feedings and shorten duration of each feeding.

Management of woman's milk, when child does not thrive: Mother must not worry. She must have good food and plenty of out-door exercise. Stimulate the appetite, also give tonic foods, such as malt food, malted drinks, etc.

Quantity deficient—Will increase with the improvement of the mother's condition. Sometimes it is due to a poor condition of the nipples, when it is necessary to bring them out by gentle massage.

Quantity abundant, but quality poor: Try to improve the mother's health. Sometimes the quality

never improves and it is necessary then to get a wetnurse or start artificial feeding.

Wet-nurse: She must be healthy, 20-30 years of age. Primiparæ are preferable. Examine carefully for tuberculosis (physical examination and Von Pirquet test); also for syphilis (Wassermann test). Examine the nurse's baby, if possible. Breasts must be good and nipples normal. Examine before and after feeding and note the difference. For a baby 3 weeks old, the nurse must not be more than 6 weeks after labor; for a baby 6 weeks old, the nurse must not be more than 2-5 months after labor. The nurse's habits must be good and she must be temperate.

Weaning: The baby must be weaned at the age of 10 months to one year.

Causes for early weaning: Pregnancy, menstruation during the period of lactation (if the quality of the milk becomes poor), severe illness of the mother. If the illness is of short duration, we may keep the breast from drying up by pumping.

If the milk continues in poor quality, in spite of continued efforts to improve the mother's health, and the baby loses, instead of gaining, it is best to wean.

Weaning should be gradual, if possible. The breast feedings may be dropped one by one, substituting artificial feedings.

Mixed feeding: Breast and bottle. We have to resort to this method when the baby does not gain on the breast alone.

We may start in by substituting a bottle for one of the breast feedings, and watching the weight. If the gain is not sufficient, we may substitute bottles for two feedings, etc.

. ARTIFICIAL FEEDING

Breast milk is the natural food for the baby, and we should obtain it whenever possible. Only when our attempts to obtain good breast milk have failed should we resort to artificial feeding.

The best substitute for breast milk is cow's milk. Fortunately, most babies take kindly to it.

The percentage of the ingredients of cow's milk differs from that of mother's milk. Thus:

	Fats	Sugar	Proteins
Mother's milk	3.5%	7%	1.5%
Cow's milk	4.0%	4%	4.0%

Attempts have been made to modify cow's milk in such a manner as to simulate mother's milk. The principal difference is in the percentage of proteids, which in mother's milk is about one-third of that found in cow's milk.

If we reduce the proteids by simple dilution we also reduce the fats and sugars. To get, therefore, the proper percentage of fat, it is necessary to use milk rich in cream. To get the proper percentage of sugar, it is necessary to add sugar.

Thus to get a mixture containing three times as much fat as proteid, we must use 12% top milk for dilution. (Gravity cream, upper 9 oz. of the bottle.)

To get a mixture containing twice as much fat as proteid, we use for dilution 7% milk (upper 16 oz. of the bottle).

To illustrate: For example, we wish to get a mix-

ture containing 3% fat, 6% sugar, and one per cent. of proteid:

The ratio between the proteid and fat is 1:3. Therefore we use the twelve per cent. gravity cream. To a baby 2 months old, we would give 7 bottles, 4 oz. each; total for 24 hours, 28 oz.

Multiply the total number of ounces required by per cent. of fat desired, and divide by the per cent. of milk used for dilution. Then add enough water to make up 28 oz.

Thus:
$$7$$
 Mixture: $\frac{\cancel{28} \times \cancel{3}}{\cancel{12}} = 7$ oz. 7 oz. milk 21 oz. water $\cancel{3}$ Total 28 oz. divide into 7 Bottles

To determine the amount of sugar to be used, we calculate the quantity necessary to make a 5% solution. This would mean ½ oz. to each 10 oz. of the mixture. One-half oz. is approximately one level tablespoon. This additional sugar, together with 1% already present, after the milk has been properly diluted, would give us 6% sugar.

To get a 4-6-2 mixture, we would have to use the 7% milk, in which the ratio between fat and proteid is 2:1. Thus, to get a total of 28 oz.:

$$\frac{\cancel{23} \times \cancel{4}}{\cancel{7}} = 16 \text{ oz.}$$

$$\frac{\cancel{16} \text{ oz. } \cancel{7\%} \text{ milk.}}{\cancel{12} \text{ oz. water.}}$$

$$\text{Total } \cancel{28} \text{ oz.}$$

Percentage feeding, logical as it may seem, has not solved the problem of infant feeding, and we use it now only occasionally.

Whole milk feeding: The cream must be evenly distributed by vigorous shaking of the bottle. To determine the quantity to be used, it is necessary to have some guide. It has been ascertained that the body requires a certain number of calories (heat units), according to its weight, so that it may be properly sustained and developed.

A calorie: Amount of fuel, yielding heat, sufficient to evaporate I c.c. of water, or to raise the temperature of I litre of water I° C.

During the first three months—The baby requires 50 cal. for each pound of weight, for 24 hours.

During the second three months—45 cal. During the third three months—40 cal. During the fourth three months—35 cal.

I oz. milk = 21 calories
I oz. sugar=120 calories

Example:

Baby during the first month, weighing 7 lbs. $7 \times 50 = 350$ cal.

350 cal. is the amount necessary for 24 hours.

We use I oz. sugar, which equals 120 cal.

To get the proper amount of milk to be used, we subtract 120 from 350, and divide by 21. Thus:

$$350 - 120 = 230 \div 21 = 11\frac{1}{2}$$
1 oz. sugar
 $11\frac{1}{2}$ oz. milk $= 350$ cal.

This gives the maximum amount that can be ordered for this baby for 24 hours. Some babies require less than others. It is not safe, therefore, to begin with the maximum caloric requirement. Some babies require

even more than the amount indicated by caloric figures. It is safest to begin with less and gradually increase according to the baby's progress.

Calories give us only an approximate guide. We must really be guided by the baby's gain in weight, and the behavior of its stomach and bowels.

Dilution: We usually begin with two parts of water to one part of milk. The milk is then gradually increased until at six weeks we use equal parts of milk and water. After that the milk is gradually increased until at three months two parts of milk and one part of water are used. Even less water may be used.

Number of feedings:

It is never necessary to use more than I quart of milk a day, as during the last three months other food is added.

Watch the baby's weight and stools and increase accordingly.

Indications for increase:

If the baby drains its bottle and cries.

If it cries 2½ hours after feeding, and the stools are normal, or small and constipated.

If the baby seems to be doing well, but does not gain in weight.

Increase I oz. for 24 hours at a time, and sugar accordingly, until the baby is satisfied and shows normal weekly gain.

Sugar: We generally use one level tablespoon to each 10 oz. of the mixture, which makes it about $1-1\frac{1}{2}$ oz. for 24 hours.

We use milk sugar by preference.

Sometimes, owing to constipation, it is necessary to change to another form of sugar.

The other forms of sugar are as follows:

Malto-dextrose Cane sugar Malt extract

When constipation persists, we may use one teaspoonful of milk of magnesia to one or two of the bottles. Often we find that the stool is in the rectum but that owing to weak muscular tone the baby is incapable of expulsion. In these cases the treatment does not depend on change in the formula.

Children suffering with constipation, with loss of weight, should be tried on the Maltsoup mixture:

A—One pint of milk, mixed together with one heaping tablespoon of wheat flour

B—One pint of water; ½-2 oz. Maltsoup (Lœflund's)

Mix A and B together, and cook slowly over a small flame for half an hour; then bring to a boil to stop further fermentation. Strain this mixture through cheesecloth. Feed in quantity corresponding to the age and weight of the baby.

The following table is based on caloric requirement, according to the babies' weight and age. The quantities given are a little below the exact figures. If after one week the baby acts well but does not show a normal gain, we simply increase the 24-hour quan-

tity, one ounce at a time, and continue to increase each week until we get the desired result. In later months the increase in the quantity used is proportionately less than in the earlier months. This is due to the fact that additional food is allowed, making up the necessary calories.

During the first three months we use plain boiled water for dilution; subsequently, barley water may be used.

Weight	Whole Milk	Sugar 2 level	Water	Divided into	No. Bottles
	9 020	tablespoo	ne		,
en 66	~~ 66			66 66	pg 66
7 " 8 "	**	2	15	66 66	7 "
	13	2	14		7
9 "	15 "	21/2 "	10 "	66 66	6 "
10 "	17 "	21/2 "	10 "	66 66	6 "
11 "				66 66	6 "
12 "	19 "	3 "	10 "	66 66	
	22	3 "	II		0
13 "	23 "	3 "	8 "	66 66	5 "
14 "	25 "	2 "	8 "	66 66	ž "
Te "		3 " 3 " 3 " 3 " 3 "	7 "	66 66	<u>ء</u>
16 "	26 "	3 "	7 11	66 66	5 "
	28	3	7		5
17 "	29 ''	3 "	7 "	66 66	5 "
17 "	31 "	2 "	m 66	66 66	ž "
19 "			6 "	66 66	5 66
*9	32	I "	υ		5 "
20 "	32 "	0 "	0 "	44 44	4 "

Supplementary diet from 9 to 18 months: The following may be allowed in rotation: Orange juice (3-\(\frac{3}{2}\)i gr., an hour before the 6 o'clock bottle), farina (boiled in water for an hour), oatmeal (macerated in water over night and boiled for two hours in the morning), crust of bread or zwieback (dry or soaked in milk), egg, beef-juice (with baked potato or bread), baked potato, carrots and peas, spinach, prunes, scraped raw apple, asparagus, apple sauce, stewed pears or peaches, custard, scraped beef. We may also give soups with farina, potato, barley, etc. During the second year the diet may be divided into three regular meals, 8 ounces of milk being given at the end of each meal.

Diet from 18 months to three years: In addition to the articles of diet mentioned above, we may give: chicken, steak, roast beef, chops (cut up very fine); also ripe apples, pears and peaches. Do not give meat at evening meal. Raw fruit should be given after breakfast; vegetables at noon; stewed fruit at supper.

Diseases of Nutrition

Acute inanition: This may occur in cases of acute indigestion, but there are cases of inanition in which symptoms of indigestion are not prominent.

Causes: Insufficient quantity of milk.

Milk of poor quality.

Inability to assimilate food (frequent in premature babies).

The child for some reason refuses food. Sudden change of food.

Pyloric stenosis, pylorospasm.

Symptoms: There may be loss of weight. Symptoms may come on suddenly, with death in two or three days. The child loses weight rapidly, 3 or 4 ounces daily. The skin is pale and dry, or it may be covered with a clammy perspiration. Sometimes petechial spots appear. Bad cases are cyanotic. The child whines and is fretful or semistuporous. The pulse is weak and rapid, the extremities are cold, respirations are rapid. The fontanelles are depressed. Pupils are sometimes contracted. The child may take food; when fed, retain it for a few hours, and then vomit the whole quantity. Stools are diarrhœal, rarely constipated. If the child has not taken any food for two days, the stools look like meconium.

Babies under one month succumb very rapidly. Temperature may be high, or subnormal.

Prognosis is uncertain, depending on the rapidity of the loss of weight.

Treatment: First, make sure that the baby is not suffering from disturbance of balance, caused by overfeeding. If such is not the case, get a wet nurse, if possible.

We may try breast milk or cow's milk, in small quantities, given every two hours. It is best to peptonize the milk from 10 minutes to 2 hours. If the child vomits that, give water and no food until the baby stops vomiting.

May try gavage (feeding through a stomach tube). May add 2 gr. of sodium citrate to each ounce of milk.

If the baby cannot retain milk, may try: Animal broths, whey, dilute buttermilk, malted milk, condensed milk. All these must be given in small quantities and very much diluted.

Keep the baby warm with hot water bottles or cotton batting.

Use injunctions of cocoa butter or oil.

Malnutrition: Caused by poor heredity. There is usually a history of tuberculosis, syphilis, gout, alcoholism, etc., in the parents. May be weak from birth, or premature. Other possible causes are: improper feeding, insufficient fresh air, severe acute diseases.

Malnutrition may persist for many years.

Infants—Babies are much under weight, gain very slowly (4-6 oz. a month, instead of 1-2 lbs.). They are anæmic, cannot sit up before the end of the first

year, or stand before the age of 1½ or 2 years. They have a tendency to be fretful and sleepless. There is feeble power of digestion and gastrointestinal disturbance from the slightest cause. The skin is dry. They are prone to sweating about the head. Dentition may or may not be delayed. They may gradually develop and become normal, or go on to marasmus. These babies are susceptible to diseases of childhood and tuberculosis.

Older children: Pale and thin, sometimes overgrown and nervous. They do not sleep well and are subject to night terrors. They also have poor digestion, constipation, anæmia. With proper care they may improve, if heredity is not bad.

Treatment: Attention to feeding. Feeding must be given at regular intervals, in proper quantities, approximately in accordance with the caloric requirement. The baby should be out in the open air as much as possible.

In older children, must pay strict attention to the rule of three meals a day, with no food between meals. This means no candy, cake, fruit, bread and butter, etc. The meals must be simple and nourishing. Another important rule is to train the mother not to coax the child to eat, but be guided by the child's appetite and do nothing to spoil it. The parents must not try to give tempting food in order to please the palate and thus to make up for a neglected meal. The child must eat only because it is hungry. Coaxing will make the child associate food with something disagreeable and a dislike for food follows. The child must also have plenty of out-door exercise. A daily bath

with a cold sponge is important. As an aid, we may also give tonics:

Maltine and iron. Liq. ferri peptomangan. Arsenic.

Marasmus (infantile atrophy, simple wasting): This does not include wasting from tuberculosis, syphilis, or ileocolitis. It is a disease of nutrition.

Causes: Prematurity, weak heredity, improper feeding, or poor assimilation of food.

Symptoms: Appearance is characteristic. The features are thin and prominent, large eyes, hollow temples, body emaciated, skin wrinkled, senile appearance, and large abdomen. Anæmia is marked. Sometimes followed by ædema, beginning by gain in weight. There is vomiting and regurgitation of food, stools may be normal, or may contain undigested food and mucus. Digestion is easily upset. The baby refuses food and must often be kept up by gavage. Temperature is subnormal. Sometimes sudden death advenes from some unknown cause, possibly due to aspiration of regurgitated food, which the baby is too weak to vomit. During the summer, death may result from slight digestive disturbance. We may also have thrush, erythema of the buttocks, opisthotonos.

Treatment: Careful feeding, fresh air, warm baths. Make the baby cry once a day and keep it warm.

Scurvy: This disease is characterized by a spongy condition of the gums, ecchymosis about the joints, especially the ankles and knees, extreme hyperæsthesia of the lower extremities, sometimes pseudoparalysis

and hemorrhage from the mucous membranes. Frequently, but not always, associated with rickets.

Etiology: Found in the rich as well as the poor. It is due to some nutritional disturbance. Cow's milk, particularly, if sterilized or pasteurized, especially when no other food is given, may be a cause. Duration depends on treatment. It may be weeks or months.

Symptoms: Hyperæsthesia about the knees and legs, increased by pressure or motion. Pseudoparalysis is due to pain or separation of the epiphyses by hemorrhage (similar to osteochondritis of syphilis).

Hemorrhagic gingivitis is rarely seen early. When present, the breath is fœtid. Swelling and ecchymosis about the large joints (knees, ankles and shoulder), is caused by hemorrhage, which may be subperiosteal, or into the epiphyses. We may have hemorrhage, which is subcutaneous, or between the muscles in severe cases. We may find ecchymosis in any part of the body. In mild cases there may be no ecchymosis. In older children, symptoms in the legs are not so common, or not so marked.

We may have hemorrhage from the mouth, nose, stomach, bowels, and sometimes kidney, bladder and urethra. In rare cases we may get hemorrhage into the orbit, causing exophthalmos; hemorrhage into the spleen, or lungs.

Cachexia, anæmia and rickets are frequently present. Diagnosis: It is often mistaken for rheumatism, ostitis, paralysis, or purpura. Diagnosis is made by the improvement under treatment. X-ray examination shows a characteristic white line between the epiphysis and diaphysis, which is in evidence before

the periosteal hemorrhage and persists for a few months after treatment has been instituted.

Treatment: Fresh milk, beef juice, orange juice, other fruit juices and potatoes. Most cases improve rapidly.

Rachitis: This disease is characterized by a change in bones, organs, muscles and ligaments.

Etiology: Improper food, usually poor in fat and proteid, seems to be the most prominent cause. Breast fed babies seldom get rickets, unless nursed too long, without other food. It is very common among the Italians and negroes. Other factors are: improper environment, city life, poorly ventilated tenements, insufficient fresh air. These causes, however, have very little effect on a properly fed baby.

It is more common in the temperate zone.

Heredity may be a predisposing cause (syphilis or tuberculosis in the parents).

Rickets does not prevent tuberculosis.

The disease occurs between the ages of 6 months and 2 years.

It is a disease of nutrition, there being a lack of assimilation of calcium salts.

Rickets may occur congenitally, or late, i. e., in utero, or after 2 years.

Lesions: Delayed ossification of bones, epiphyses soft and large.

Long bones are porous, flat bones have swelling at points of ossification.

Lungs may be partially collapsed (Harrison's groove).

Spleen congested and large.

Liver congested and sometimes large.

Lymph sometimes hyperplastic.

Cerebral change is rare, and large head is due to swelling of bones.

Sometimes hydrocephalus, but it is questionable whether there is any association.

There is usually a low grade catarrh of the stomach and intestines, with loss of tone.

The muscles are weak and undeveloped.

Symptoms: Early symptoms—Sweating at the back of the head, with hair worn off, restlessness, constipation, beading of the ribs, cranio-tabes (bones of the skull thin as parchment, yield to pressure).

Cachexia appears only after a few months.

Deformities: Head is characterized by frontal and parietal bosses. The head is square and large, the fontanelles closing late; the veins are prominent. The head is large in proportion to the body, usually remaining large. The occiput is flattened from lying down.

Chest—Rachitic rosary is brought about by beading of the ribs at the epiphyses. The ensiform is depressed, the sternum is prominent. There is a groove corresponding to the attachment of the diaphragm to the ribs (Harrison's groove). This deformity is more marked in cases of hypertrophic tonsils and adenoids. The clavicles are curved forward at inner third, and shortened; greenstick fractures are frequent.

Spine: Kyphosis (round back), or scoliosis (lateral curvature). These disappear on raising the body by the feet.

Humerus—curved, epiphyses large.

Radius and ulna—epiphyses large at the wrist. Greenstick fractures are frequent.

There are similar changes in other long bones, but they are not as easily palpated. Other deformities are: Knock-knee, bow legs, curvatures of the tibia and fibula forward, backward, outward, or inward. Walking is a factor, though not a necessary one, in producing curvature.

Pelvis flattened, growth of the child arrested.

Ligaments loose, cause genu recurvatum (over-extension), loose joints, curvatures of the spine.

Muscles are flabby and weak, sometimes pseudoparalysis.

We must differentiate from infantile palsy and cerebral flaccid paralysis.

Babies suffering from rickets cannot sit up or stand, and begin to walk very late.

Pot-belly is caused by weakness of the abdominal muscles, with relaxation of the stomach and intestines, as well as tympanites caused by fermentation. Constipation is caused by the same factors. Hard stools result in catarrhal condition of the rectum. Sometimes constipation alternates with diarrhœa. Tenderness of the limbs is rare. If present, it is most likely a case of scurvy.

Dentition is late. The first teeth may appear early, but after that the rest of the teeth appear very late. The teeth are good.

Anæmia present, 30% hæmoglobin, leucocytosis.

The baby is usually fat and flabby, but sometimes thin.

Adenoids, large tonsils, and large lymph glands are frequent.

The children are susceptible to bronchitis, bronchopneumonia and gastroenteritis, which often persists.

The spleen and liver are displaced downward, sometimes moderately enlarged during the acute stage, between the 6th and 12th month.

Nervous symptoms: Restlessness, spasmophilia (tetany, laryngismus stridulus, general convulsions).

Course and termination: The duration of the disease is usually 3 to 6 months. Recovery is spontaneous at 18 months, owing to the variation of diet.

Congenital rickets may occur.

Late rickets: Cases have been reported as late as 6 to 12 years.

Diagnosis: Hydrocephalus—Large head, no parietal bosses, very large fontanelles.

Cretin—Body short and fat, facial expression stupid, very large tongue, spade-like hand, broad nose, etc.

Cerebral, or spinal paralysis—History, reflexes increased, intelligence impaired.

Syphilis—Boggy infiltration of shafts, not ends, necrosis sometimes present, other signs of syphilis, Wassermann reaction, X-ray.

Scurvy—Hyperæsthesia, blue gums, anti-scorbutic diet, X-ray examination (white line).

Pott's disease—Angular curvature and permanent. Achondroplasia—The long bones are normal but short, body is normal.

Prognosis depends on the treatment, occurrence of intercurrent diseases and progress of the disease before treatment.

Treatment: This is most important from the third to the fifteenth month, as by that time all the harm has been done if left untreated. Proper feeding is most

important. This should consist of breast milk, if possible, or cow's milk. After the 6th or 7th month, we must give supplementary feeding, consisting of cereals, potato, beef juice, orange juice. The baby should have plenty of fresh air.

Medication:

Oil Phosphorus (1%) Uxv 1.00 Emulsio Morrhuæ 5ii 60.00 Sig. 3i t i d p c

Elix Phosphorus, Dose ¶x-xx Syr Ferri Iodid., Dose ¶v-xx

Deformities should be treated by massage, manipulation and exercise. Sometimes we have to resort to orthopedic braces and operations in order to correct deformities.

It is important to attend to hypertrophied tonsils and adenoids.

It is best to have the child lie on its bed without any pillow.

1. 1

DISEASES OF NUTRITION

Disturbance of nutrition in breast-fed infants:

- A. Overfeeding.
- B. Insufficient feeding.
- C. Unsuitability of special breast milk.
- D. Insufficiency of digestive organs (prematurity) heredity, malformations, etc.).
 - E. Bacterial contamination.

Disturbance of nutrition in artificially fed infants:

- A. Overfeeding.
- B. Insufficient feeding.
- C. Failure of utilization of the food (either as a whole or in its individual constituents).
 - D. Bacterial contamination.

Clinical diagnosis:

Body weight.

Examination of the milk (breast, or cow's).

Examination with the stomach tube, especially to determine the motility of the stomach. The stomach should be empty after $2\frac{1}{2}$ hours in the breast-fed, and after $3\frac{1}{2}$ hours in the artificially fed.

Examination of the stools.

Disturbance of nutrition in the breast-fed—Over-feeding: Normally, hydrochloric acid saturates food and acts as a stimulant to secretion of bile and pancreatic juice. Too great a quantity of food, or too frequent feedings, will prevent this normal action. At first, nature tries to correct this error by regurgitation

of milk immediately after feeding, frequent stools and loss of appetite. If overfeeding is still continued, the baby will begin to vomit a half to one hour after feeding. The vomitus has a sour odor and contains curds both small and large. The baby is irritable and does not sleep, but cries after feeding. Diarrhœa develops, a great deal of gas is passed, and the stools contain green and white curds, and smell sour. The child has colic. The stools are yellow at first and then turn green around the border. The stools are acid, irritating the skin, causing intertrigo. The baby frequently develops eczema. Usually there is no fever, but occasionally there is an initial rise in temperature.

Treatment: Stop feeding.

Give castor oil, calomel, or magnesia and rhubarb.

Give water, or tea with saccharin every three or four hours.

Continue this for two or three days if necessary, until the diarrhœa and vomiting stop. Then start in with very small quantities of breast milk (beginning with one or two minutes), preceding the water.

Gradually increase the feeding, in accordance with the baby's behavior.

If the vomiting does not stop, try sodium citrate, 2 gr. to each 2 oz. of fluid given.

We may also try peptonizing the milk after it has been procured by means of a breast pump, or we may give 5-10 grains of peptogenic milk powder after each feeding.

As a last resort, wash the stomach and bowels.

For colic, we may use a hot water bag to the abdomen, or chloral hydrate 1/3 gr. every hour or two.

A rectal injection of 5i-ii of cold water will often cause expulsion of gas.

For intertrigo:

Liq. Carbonis Detergensis

Zinci Oxidi

Glycerin

Lac. Magnesiæ

ad

7v-3i

3v

5iv

Apply this lotion twice daily.

Insufficient feeding: The baby should gain 4 to 6 ounces a week. If the gain is less than that, we should investigate. Weigh the baby before and after the feeding, to ascertain how much below the average amount it is getting during 24 hours. A baby getting insufficient food is thin, abdomen is flat, it may cry after each feeding, struggles at the breast without swallowing and may in extreme cases lose power to swallow. Sometimes the baby will not cry between feedings on account of lowered vitality. It may even sleep a great deal and has to be awakened for feeding. Stools are infrequent and dark brown, or mucoid and greenish-black.

Treatment: Attention to the mother's health. If the case is extreme, get a wet nurse, or give supplementary artificial feeding. Find out how much is lacking during 24 hours, supply accordingly. Additional feeding may be given after each nursing, every three hours, or we may substitute an artificial feeding for one, two, or three breast feedings. If that does not help, try to get a wet nurse, or change wet nurses if the child is less than six months old. If the baby is older than six months, we may wean.

When giving supplementary artificial feeding, we

determine the quantity to be given in each bottle by calculating the quantity that the baby would require for 24 hours and dividing by six.

Unsuitability of special breast milk: This may cause vomiting, diarrhœa, loss of weight. The milk may be too rich in fat, or there may be some other cause which is difficult to determine. It is a known fact that in these cases a change of food often results in immediate improvement.

Do not condemn the breast milk until you are certain that overfeeding has not started the trouble.

Insufficiency of digestive organs: This is caused by premature birth, hereditary taint, intrauterine infection, malformation of digestive organs, mechanical obstacles to sucking, such as high arched palate, with narrowing of the nasal cavity, harelip, tongue-tie, etc.

Bacterial contamination: Rare in breast-fed babies. Breast milk is not always sterile. The duct and nipples may become infected (most frequently staphylococcus, or colon bac., less frequently streptococcus).

Will cause acute gastro-enteritis with sudden onset.

Treatment: Pump breast well, paint outside with
Tr. Iodine.

If contamination still exists, change feeding. At first give baby a cathartic, water, tea, etc.

Disturbance of artificially fed infants—Overfeeding: This means too great a quantity of food, or milk that is too rich in quality, or food that is given too frequently.

The tendency of the mother is to interpret every cry as that of hunger. At first, we have vomiting immediately after feeding; later, vomiting will take place some time after the feeding. Vomitus contains large

curds, water, and sometimes serum and bile. It smells sour.

Stools are normal at first, later becoming diarrhœal. They contain white and green curd, also mucus. There are usually four to six stools a day.

The stools may be irritating, causing intertrigo.

The abdomen is distended.

These symptoms are of varying intensity.

We may have high temperature. Urine contains indican (putrefaction).

The condition may result in cholera infantum, with excessive vomiting and diarrhoea, causing rapid wasting, sunken features, and depressed fontanelles.

Treatment: Water, tea, calomel, or castor oil. If nothing is retained, we must employ lavage and enema.

If the baby is very young, try to get a wet nurse, if possible.

When that is impossible, add cow's milk in very small quantity to the water, increasing very gradually.

If stimulation is necessary, use caffeine sodium benzoate, dose ½-½ gr. subcutaneously. If the cholera infantum type is present, we may use hypodermoclysis (subcutaneous injection of .4% saline solution with .3% sod. bicarb.). The amount given is about four ounces, two or three times a day.

Failure in utilization of the food (as a whole, or in its individual constituents)—Anaphylaxis (food allergy): To some babies, cow's milk acts as a poison. Just as some patients cannot tolerate even a fraction of a grain of quinine (drug idiosyncrasy), so these babies cannot stand even a teaspoonful of cow's milk without symptoms of toxæmia.

These symptoms may be quite severe.

Thus: fever, pallor, toxic erythema, vomiting, even convulsions.

Attempts have been made to immunize by injection of cow's serum in gradually increasing doses. The results are promising.

It is imperative to put these babies on breast milk.

Too much fat in the milk mixture: This may at first cause dry, brittle, light-colored stools (soapy stools); later, vomiting, diarrhœa, oily stools, with yellow curds. Urine has a strong ammoniacal odor.

If continued, atrophy may develop.

Bacterial contamination at this period is not uncommon.

Starch: Used in abundance, too early, will cause moist, dark stool, containing undigested starch, which may be recognized microscopically, or by means of the iodine test.

If continued, it is apt to cause vomiting, diarrhœa and atrophy.

Sugars: Too much sugar will cause acid and green stools.

It is the chief factor in the etiology of gastroenteritis, or summer diarrhœa. Finkelstein pointed out that continued use of excess of sugar and salts in the food will cause the following in succession:

- Disturbance of balance—Regurgitation of food, frequent stools.
- 2. Dyspepsia—Vomiting, diarrhœa.
- 3. Decomposition—Atrophy, marasmus.
- 4. Intoxication—Bacterial contamination, cholera infantum.

This has given rise to casein, or Eiweissmilch, which is rich in proteids, poor in salts, and contains very little sugar.

Treatment: When the case has not gone further than disturbance of balance, reduce the sugar content of the milk mixture, after having administered an initial cathartic.

If the case has gone further and developed dyspepsia:

Take away all food.

Give castor oil ($\frac{1}{2}$ -1 teaspoonful), or calomel ($\frac{1}{10}$ gr., 1 every hour, 10 tablets).

Give water or tea with saccharin (I gr. to a quart of water).

Continue this for two or three days. If diarrhœa stops, begin with small quantities of milk in the water every four hours.

If the diarrhoa does not stop, try the albumen milk in gradually increasing quantities.

Preparation of albumen milk:

To a quart of milk, in a water bath at 108° F. (42° C.), add two tablets of rennet, or a table-spoon of Fairchild's pepsin.

Allow this to stand three-quarters of an hour.

Strain through cheesecloth for one hour.

Rub casein through a fine sieve, with a potato masher.

Wash the remnants with one pint of water, poured through the sieve.

Add one pint of buttermilk.

This will give us a quart of casein milk. Add gr. i of saccharin to sweeten.

Use in quantities corresponding to the age and weight of the baby.

Make dilutions similar to those of regular milk mixtures.

Bacterial contamination: Streptococcus—Causes severe form of gastroenteritis, with fever, vomiting and diarrhœa, prostration and sepsis. Prognosis is bad.

Bacillus pyocyaneus—Symptoms are not severe. Bowel discharges are green or blue.

Dysentery bacillus (Shiga or Flexner)—Symptoms are those of acute or subacute colitis.

Amœba coli—Subacute colitis. Amœbæ in the stools.

Colon bacillus—May become virulent and cause enterocolitis.

Bacillus aerogenes capsulatus (gas bacillus)—The stools are diarrhœal, and are accompanied by the expulsion of a good deal of gas.

Cholera infantum: This is a condition resulting from a very acute infection. It seldom occurs in a previously healthy child, but usually follows a milder gastrointestinal disturbance.

Symptoms: We may have fever and prostration a few hours before the appearance of other symptoms. Vomiting then starts in, followed by purging, or both may begin simultaneously. At first, there is vomiting of food, then, serum and bile. If vomiting ceases, food starts it again.

There may be 12-15 stools in half a day. Sometimes there is relaxation of the anus and small stools ooze out every few minutes.

The stools are yellow, green, or brown; later serous.

At first, the stools are acid, then neutral, and finally alkaline.

There is great loss of weight. The tongue is coated at the start; later red and glazed. The fontanelles are depressed, the cranial bones sometimes overlapping. The abdomen is soft and sunken. Thirst is a prominent symptom, the baby, sometimes, not passing urine in 24 hours.

The nervous symptoms are crying, moaning, bordering on delirium, followed by stupor, coma, and convulsions.

Breathing is rapid, later stertorous; pulse is rapid, weak, and intermittent.

Temperature is 102°-105° F.

These symptoms rarely continue longer than 24 hours, the case either improving or becoming worse.

If the case is fatal, we get hyperpyrexia, coma, and convulsions.

In other cases, the temperature is subnormal, and there is irritability, apathy, pinched appearance, pulse intermittent or imperceptible, breathing irregular or Cheyne-Stokes, skin clammy, pupils covered with a film, fontanelle depressed, abdomen retracted, no desire for food, but thirst, rigidity of the muscles of the back of the neck.

These symptoms may gradually disappear, and recovery follow. Death is a more likely outcome.

When recovery takes place, vomiting gradually ceases, stools diminish in number and become more solid.

Sometimes diarrhea continues for a few days and ileocolitis follows.

Recovery is slow. Sometimes there is recurrence

of the symptoms after two or three days, which is fatal.

Sometimes it is followed by sclerema, which is fatal.

Prognosis: 66% fatal.

Treatment: Stop all diet.

Give water by hypodermoclysis, 8 oz. in 12 hours.

We may use subcutaneously morphine 1/100 gr. and atropine 1/800 gr. when no coma is present. Stimulate with whiskey, πv q. 3 h. by hypo. (diluted). We may also give camphor in oil gr. i q. 3 h. These doses are for a one-year-old baby.

Wash out the stomach and bowels.

Keep warm with hot-water bottles, if the extremities are cold.

When the vomiting stops, give water, and gradually add milk, one drachm at a time.

Instead of milk, we may use albumen milk, buttermilk, or peptonized milk. Breast milk, if obtainable, is best of all.

DISEASES OF THE MOUTH

Malformations: Harelip—Due to failure of union of the fœtal arches (Globular arches).

Cleft palate—The failure of union is extended into the palate.

Stomatitis—Catarrhal: This form may be caused by irritants, heat, etc., and precedes all other forms of stomatitis.

The mucous membrane is red and sensitive, associated with salivation.

Maculofibrinous (aphthous): This form is caused by some infection.

Scattered all over the mucous membrane, we see a number of yellowish spots of varying size. These are surrounded by a reddish area. The spots are called aphthæ. They are in reality little vesicles, which soon become ulcers.

A number of small ones may coalesce and form large ones. We get salivation and burning pain in the mouth. Fever is generally present, also diarrheea.

Treatment: Warn the mother against the use of a pacifier and dirty utensils.

Local application of 5-10% silver nitrate.

Internal medication: For one-year-old baby—

 Kali Chlor......
 0.5-grviiss

 Tr. ferri Chl.....
 1.0- ₹xv

 Glycerin.......
 15.0-₹ss

 Aquam ad.......
 60.0-₹sii

 Dose, 7si q. 2 h.

Ulcerative: The gums are first affected. These separate from the teeth, discharge pus and ulcerate. The contiguous portions of the tongue and buccal mucous membrane also become ulcerated (rarely the palate). Duration is 6 to 10 days. The child is irritable and has some rise in temperature.

The odor of the breath is offensive.

Treatment: Local application of 10% silver nitrate, and internal administration of potassium chlorate.

Gangrenous (cancrum oris, noma): This form always follows some severe illness (measles, typhoid, etc.).

At the onset it looks like an ulcerative stomatitis. Usually affects only one side. It begins as a swelling on the cheek, which has a pale, waxy appearance and is painless. In the mouth we notice a dirty yellow ulcer. The breath is fœtid. Gangrene spreads rapidly, and in a few days eats away a good part of the mouth and cheek.

At first the child is playful, but soon severe symptoms develop: fever, delirium, diarrhœa, coma, death.

Sometimes it is associated with abscess of the lung or pneumonia.

Prognosis—15% recoveries. In cases which recover, a marked deformity of the mouth results.

Treatment: Fulguration (high-frequency current), excision, Paquelin cautery, salvarsan, or neosalvarsan in glycerin, locally applied.

Thrush: Most commonly found in babies that are unhealthy, ill-fed, and suffer from gastroenteritis, also in infants with mouth deformities. The infection is brought on by uncleanliness of nipples, pacifiers, etc.

It is caused by a fungus, saccharomyces albicans.

It appears as a white flaky growth on the buccal mucous membrane and the tongue. Small spots coalesce and form large areas.

Any attempt to rub it off causes bleeding.

It may extend to the nose and cosophagus and rarely to the stomach, as well as to the intestines.

In rare cases it may get into the circulation and cause sepsis, with formation of metastatic abscesses. Streptococcus and staphylococcus may be found associated with it.

Symptoms: The mouth is sore, sucking is difficult. There is a slight rise in temperature, and diarrhoea, which may be the underlying cause.

Treatment: Cleanliness, 2% boric acid solution, which may be used on a gauze teat.

Bednar's aphthæ (ulcera pterygoidea): We find a bilateral ulcer on the hard palate. It may also be central.

It may become confluent, and assume the shape of a butterfly.

It is caused by too energetic washing of the mouth.

Treatment: 5% silver nitrate applications daily.

If nursing is painful, apply 1% cocaine, or insufflation of orthoform before each feeding.

Gonorrheal stomatitis: This affection is rare. Without any preliminary redness, a yellow exudate appears along the angles of the palate, the raphe and gingivo-labial fold.

The surface is rough and gradually assumes a yellow discoloration.

The process is confined to the mucous membrane and heals spontaneously in a few days.

Perlèche (Epstein's faule Ecken): This is an affec-

tion characterized by a development of a concentric fissure in the corners of the mouth. The skin area surrounding the corners is slightly reddened and darker than normal. A little discharge oozes from the fissure. It is most frequent in ill-nourished children. It is probably of infectious origin.

Treatment: Tr. iodine, balsam Peru, camphor ice.

Exanthemata: Upon examination of the mouth we must not mistake eruptions, such as those of measles and chicken-pox, for stomatitis.

Anomalies of the tongue—Geographical tongue (glossitis exfoliativa areata, annulus migrans): This is a congenital tendency to persistent desquamation of the epithelial covering of the tongue. At first we see a grayish spot at the tip of the tongue, which spreads and extends towards the dorsum. Then the central part becomes red and is surrounded by a grayish border. This process repeats itself.

There is no cure.

We may apply a strong solution of chromic acid, followed by a solution of aluminium acetate.

Ulcer from irritation of a carious tooth: A painful condition. File the rough edge of the tooth, and have cavity filled.

Macroglossia: Found in myxœdema, Mongolian idiocy, acromegaly.

Subglossitis: Phlegmon under the tongue; opens spontaneously.

Ulcer of the frenum: Found in whooping cough.

Fibroma of the frenum: Probably caused by irritation by the lower incisors. Treat surgically.

Teething: Teething is a normal process and usually does not give any symptoms.

Sometimes the gums appear swollen and red.

Teething does not cause fever, diarrhœa, etc. If present, look for other causes.

Teeth appear usually in the following order:

Between the 3d-9th month—2 central lower incisors.

Between the 9th-12th month—4 upper incisors.

Between the 12th-18th month—2 lateral lower incisors and 1st molars.

Between the 18th-24th month—the canines.

Between the 24th-30th month—the 2d molars.

At age of 6 years—1st molars (6-year molars) form behind the 2d molars of the milk teeth.

Between the 7th-8th years—incisors.

Between the 9th-10th years—bicuspids.

Between the 12th-14th years—canine.

Between the 12th-15th years—2nd molars.

Between the 17th-25th years—3rd molars (wisdom teeth).

Hutchinson's teeth: Short stumpy teeth with semilunar excavation of the borders, found in children suffering from congenital lues. Only permanent teeth are affected.

Scrofulous teeth: There is a greenish or brown discoloration of the teeth (first incisors) near the gums. This is followed by caries near the gums.

Diseases of the salivary glands—Ranula: A cystic tumor situated beneath the tongue, due to occlusion of the salivary duct. It appears as a grayish tumor on both sides of the frenum. Treatment is surgical.

Acute inflammation of sublingual or submaxillary glands: Pus oozes out from the ducts. Prognosis is good.

Primary idiopathic parotitis: Same as mumps.

Secondary parotitis: This form may follow stomatitis, or otitis media. It may also be secondary to typhoid, or one of the exanthemata.

Treatment: Try an embrocation of iodovasogen. If pus forms, incision and drainage.

TONSILS, PHARYNX, ŒSOPHAGUS

Tonsillitis: (Angina) Catarrhal,—follicular,—lacunar.

The tonsils are swollen and red. In the follicular form the follicles are filled with a yellowish detritus, which gives the tonsil the spotted appearance. In the lacunar form large masses of detritus collect in the crypts.

The onset is acute, with a sudden rise of the temperature (102-103°), general malaise, headache, pains all over the body, pain upon swallowing. During the first three or four days, the pain in the throat increases in intensity especially at night, when patients complain most bitterly. After that, there is a subsidence of the inflammation, with recovery at the end of a few days.

The cervical glands are frequently enlarged.

The temperature remains high during the first three or four days, unless modified by the use of antipyretics.

Tonsillitis may be a forerunner of a general infection.

It is frequently associated with rheumatic fever, endocarditis, and chorea.

Treatment: Give a cathartic.

Aspirin and phenacetin (āā 1 gr. q. 4 h. for a child 2 years old).

Also:

Kali chlor. I—gr. 15.
Tr ferri chlor. 2—¶ 30.
Glycerin 15—₹ ss oz.
Aquam cinnamon ad 60—₹ii. Dose: I teaspoonful q. 2 h.

In place of the aspirin and phenacetin and the iron mixture, we may use a solution of carbolic acid—2%. Dose: A teaspoonful q. 2 h. for a child 2½ years old. Its action is local and systemic. These doses are larger than the pharmacopeia allows, but experience has proven them to be safe.

Retronasal angina (Adenoiditis, inflammation of the pharyngeal tonsil): The symptoms and course are similar to those of ordinary tonsillitis.

Parenchymatous tonsillitis: (Tonsillar and peritonsillar abscess, Quinsy). There is an infiltration of the tonsil and surrounding tissues causing a swelling that may extend to the uvula and beyond. Sometimes, the inflammation subsides without suppuration, but usually it goes on to pus formation. If left alone, it ruptures spontaneously. Sometimes the inflammation, instead of remaining circumscribed, spreads and becomes phlegmonous.

Symptoms are: Extreme pain, especially on swallowing or talking, excessive flow of saliva, a gradual rise in temperature, a general malaise. Evacuation of pus is followed by immediate relief of all symptoms. Cervical glands are enlarged.

Treatment: Compress around the lower jaw, applied from ear to ear. Pain may be relieved either by swallowing ice, or gargling with hot water. Internal medication the same as in follicular tonsillitis. Sur-

gical treatment—incision as soon as you find fluctuation.

Pseudomembranous angina (Angina ulcerosa, Vincent's angina): Onset is the same as that of ordinary tonsillitis. The temperature is not high. The appearance of the tonsil is characterized by the formation of an ulcer, which is covered by a viscid discharge. In mild cases there is only a slight erosion of the mucous membrane, with a membranous covering. In severe cases the ulceration is marked. The membrane may disappear after a week, or it may remain longer.

Prognosis is good in the majority of cases. In rare cases ulceration is very extensive, with a fatal outcome.

Diagnosis: We must exclude diphtheria and syphilis.

A microscopic examination of a smear of the membrane will show a large thick bacillus (Bac. of Vincent) and a long spirillum (Spir. of Miller). When still in doubt, take a culture and do a Wassermann test.

Treatment: Local application of a solution of methylene blue (1%) and 10% silver nitrate.

Gangrenous angina: Gangrenous inflammation of the pharynx. The odor is frightful and the cases are fatal.

Septic phlegmon and erysipelas of the pharynx may occur in the newborn and is fatal.

Hyperplasia of the tonsil: Hypertrophy is caused by repeated inflammations in susceptible subjects. When very large, it interferes with respiration and proper development of the child.

Treatment: Excision.

Hyperplasia of the pharyngeal tonsil (Adenoid vegetations): This affection is prevalent between the ages of six to eleven years. It is very rare after puberty. It is marked by the following characteristics:

Stupid facial expression, sometimes exophthalmos, mouth open, nose discharging mucopus and nasal breathing impossible; the palate is high arched. The chest is deformed (chicken breast). Frequently there is deafness and otitis media. Physical condition is poor and mental development is retarded. Cervical glands are enlarged.

Sometimes it is the cause of persistent temperature, especially after some infectious disease.

Children with adenoids are more susceptible to infections and colds.

Treatment: Adenoidectomy. In cases in which adenoids are only slightly developed we may employ palliative treatment by douching the nose with salt and water. Use a half teaspoon of salt to a glass of warm water. In douching the nose, be careful to turn the child's head to the side opposite the nostril douched, so as not to drive the discharge into the Eustachian tube opening.

Tumors of the nasopharynx are rare. The following may occur:

Dermoid cyst, fibroma, lipoma, fibrosarcoma, lymphosarcoma of the tonsil, or rhinoscleroma.

Retropharyngeal abscess (Lymphadenitis): Symptoms: Fever, pallor, head to one side, laryngeal stridor, weak cry (in infants), brassy cough, difficulty in swallowing, mouth kept open. Examination discloses a swelling in the posterior pharynx, usually a little to

one side, behind the tonsil. At first this swelling is hard and movable, but later it becomes immovable and fluctuating. It may be felt or seen. Pus may burrow its way to the region of the parotid, or to the neck, or down to the mediastinum. Cervical glands are enlarged. The abscess may open spontaneously and inspiration pneumonia may result. It may cause pyæmia, or septicæmia.

Diagnosis: We must differentiate from tuberculosis of the cervical vertebræ, wry neck, diphtheria of the larynx, catarrhal croup. Prognosis is good if treatment is given early.

Treatment: Early incision, with head low, turning head to one side quickly after the incision has been made to prevent inspiration of the pus. It is best to use a blunt instrument and make the opening ragged-edged to get better drainage.

Diseases of the œsophagus: Congenital atresia, or stenosis: Regurgitation of food, early death.

Acute œsophagitis: This may be caused by some corrosive poison. If recovery takes place, it is frequently followed by the development of a stricture, which must be treated by gradual dilatation with bougies.

LOCAL DISEASES OF THE STOMACH AND INTESTINES

Ulcer of the stomach: This is of rare occurrence in children, and very difficult to recognize, as not all cases show vomiting of blood.

The characteristic signs are: hæmatemesis, tarry stools, gastralgia, localized peritonitis.

Ulcer of the duodenum gives similar symptoms, and is still harder to recognize. This condition is probably more frequent than generally believed.

Treatment: When bleeding, inject a 2% solution of Russian gelatine hypodermatically, ½ oz. every few hours until the bleeding stops. Injection of horse serum 5-10 c.c. may increase the coagulability of the blood. Before giving the horse serum, try a few drops first, in order to exclude anaphylaxis. We may try transfusion, or intramuscular injection of human blood or serum 4 to 6 oz. Nourishment should be limited to rectal feeding, or by means of a duodenal tube.

Medication: bismuth subnitrate, 5-10 gr. q. 3 h., or carbolic acid 2%, 3 i q. 2 h.

Fissure of the anus: Caused by constipation. It is a longitudinal linear ulcer above the anal opening.

The child suffers severe pain after bowel movement, also tenesmus. The stool is streaked with blood, and sometimes there is a loss of a few drops of blood.

Treatment: First apply a 10% sol. of cocaine, with an applicator, follow this with a 10% sol. of silver

nitrate. Give a few of these treatments, one every day. Also give a laxative.

In the majority of the cases no other treatment is necessary. If the fissure persists in spite of treatment, we must then resort to the surgical procedure of forcible dilatation of the anus under gas or ether anæsthesia or excision and suture.

Prolapse of the rectum: This is a protrusion of the rectal mucous membrane outside the anal opening.

Causes: Diarrhœa, constipation, rectal polyps, whooping cough. First treat the causes. The child must be made to defecate in a recumbent posture. Draw the gluteal parts closely over the anus, hold together with Z. O. adhesive plaster. We may attach strings to adhesive strips on either side and some distance from anus. After the strips are properly applied, draw the two sides over the anus by tying the strings. These may be opened during bowel movement.

CONSTIPATION OF INFANTS

Causes: Malformation, partial atresia of the anus or rectum, congenital dilatation of the lower bowel (Hirschsprung's disease), fissure in ano, insufficient amount of food, unsuitable form of sugar, used in artificial feeding, too much fat (brittle soapy stools), atony of the large intestines, caused by malnutrition, rickets, etc.

Some infants may get on very well in every way, but they do not seem to be able to expel the stool, without some local irritation, or stimulation. There is a moderate amount of atony of the rectum present, and a large quantity of fæces collects there, and becomes dry and hard. Suppositories and soapsuds enemata are resorted to, which only tend to confirm the habit of constipation.

Treatment: Try to find out the cause. When artificially fed, modify the form of sugar used, changing from milk sugar to maltodextrose. If that does not produce the desired effect, substitute one to four drachms of malt extract, for an equivalent amount of sugar, used in a 24-hour mixture.

In marantic babies, with constipation, try the maltsoup and flour mixture.

For babies that seem to be doing well we may add a teaspoonful of milk of magnesia to one or two of the bottles.

If the stools are dry, brittle and clay-colored, reduce

the amount of cream used. This may be done by decanting some of the gravity cream off the top of the bottle before shaking.

In older infants we may aid by adding orange juice, prune juice and mashed prunes, or scraped raw apple to the diet.

If constipation still persists after all these measures, it is then necessary to resort to some form of local stimulation. This consists of the use of suppositories, gluten, or glycerin, or the injection of water, plain, or with soapsuds (5ss-ii) into the rectum every morning after a feeding. This usually has the desired effect, but also confirms the habit of constipation. Very good results have been obtained from the use of Russian mineral oil. It may be administered internally in older infants, but ordinarily it seems unnecessary to lubricate the entire canal, as the obstruction is only at the lower end.

Very satisfactory action has been obtained by injection of 5i of the oil into the rectum early in the morning or at night. Sometimes it is necessary to aid at first by the use of a gluten suppository. Stools that had previously been hard and caused much pain upon expulsion become soft and easy to expel. It frequently happens that the baby begins to have normal movements without the use of the oil. Even when it is necessary to use a gluten suppository as an aid the stools are soft and are expelled without pain.

Congenital Dilatation of the Colon (Hirschsprung's Disease): It may appear at birth, or a few months later. The appearance is characterized by a balloon-shaped abdominal distention. The dilatation may first appear in the sigmoid region. The stools are small

at the start, later spontaneous evacuation is impossible. The colon is long and dilated, also constricted in spots; some sections of the muscular wall are hypertrophied, others are atrophied; ulcers as well as submucous abscesses may form.

The child is restless and has no appetite. The superficial veins of the abdomen are dilated; the diaphragm may be pushed up and cause dyspnæa and cyanosis.

These symptoms may be temporarily relieved by enemata and abdominal massage, etc.

Death from weakness and exhaustion, or pneumonia, is the usual outcome.

Treatment: Kneading massage of the colon; irrigation, with digital removal of the fæcal accumulation. We may try faradic current, with one pole in the rectum, the other on the abdomen.

Operation: Removal of a section of the colon. Results have not been brilliant.

Intestinal atresia and stenosis: Causes: Maldevelopment, intrauterine syphilis, tuberculosis, intussusception, volvulus, pressure by tumors, persistent omphalomesenteric duct, amniotic bands, by which occlusion occurs in the form of transverse septum. The acquired form may be caused by strangulation (hernia into peritoneal fossæ), intussusception, volvulus, pressure by tumors, Meckel's diverticulum. The acquired form differs from the congenital by the sudden onset, colic, vomiting, diarrhæa with bloody stools, etc.

In the congenital form we have distention, persistent vomiting, no bowel movement. The vomitus contains bile (except in pyloric stenosis). Distention

may cause pressure on the ureters and stop the flow of urine. Prognosis is bad.

Treatment is surgical.

Intussusception (Invagination): There is an invagination of one of the intestines into another. This is usually descending, but may rarely be ascending. The ileo-cæcal section is most frequently affected. The ileum descends into the cæcum, rolling itself inside out, becoming thus telescoped. It is caused by the presence in the intestines of some foreign indigestible substance, which causes colic.

At first there is severe abdominal pain, which is soon localized, if the child is old enough to explain. It is most common in children 5-6 years of age. Later we have vomiting and frequent small bloody mucous stools. Vomiting persists and finally becomes fæcal.

Physical examination discloses a sausage-shaped tumor on the right side of the abdomen. This is sometimes difficult to feel, owing to the rigidity of the abdominal muscles, caused by colic, but may be felt between attacks. Sometimes the intestine keeps on descending until it reaches the rectum, and may be felt there by digital examination, not unlike a soft cervix. Must be differentiated from a rectal polyp. Sometimes the intestine descends still lower and appears outside like a prolapse of the rectum. Here we recognize the difference by the symptoms and physical finding. Mild cases may return to normal. Symptoms may recur. Rarely nature will cause the invaginated portion to become sloughed off, and thus bring about spontaneous recovery. An acute attack usually lasts one week. It may last two weeks, or become chronic. In chronic cases the obstruction is not complete.

Treatment: We must bear in mind the fact that operative procedure is successful only during the first 24-36 hours. We must, therefore, confine our palliative measures to that period. First, give an enema with saline solution, using I pint to a quart of water, introducing it from a height of 2 feet, with pelvis elevated. Then try to reduce by taxis. If unsuccessful, we may then try to balloon out the colon with air or fluid. Do not try this method too long, as you may rupture the colon. It is most advisable not to try distention, unless you are in all readiness to start the operative procedure. In chronic cases, make several attempts at taxis. The majority of the cases have to be operated.

Atresia of the rectum or anus: This may sometimes be complicated by communication with the bladder, urethra, or vagina.

Sometimes there is fistulous opening in the region of the scrotum, which communicates with the rectum.

Treatment is surgical.

GASTROINTESTINAL DISEASES OF OLDER CHILDREN

Gastric indigestion: Duration is one to three days, sometimes longer, if improperly treated. The child feels and looks sick. There is headache, pallor, dizziness, nausea, vomiting, and possibly convulsions. The temperature may go up to 105° F. Vomiting may, sometimes, relieve all symptoms, especially if soon after the offending meal. The abdomen is distended and there is usually constipation. Similar symptoms may be caused by influenza, or the case may look like typhoid, one of the exanthemata, or pneumonia.

Treatment: Calomel, lavage, if necessary, starvation. If vomiting persists give cerium oxalate and sodium bicarbonate aa gr. iiss q. 2 h., in a little water. Mustard plaster over the epigastrium. When vomiting stops give weak tea, and later small quantities of milk well diluted. We may add 2 grains of sodium citrate to each ounce of fluid given. We may also give barley water with a little orange juice. When loss of fluid through vomiting is great, give saline enema.

Recurrent vomiting with acetonuria: There is a state of acidosis of the blood, caused by autointoxication. It is most frequent between the ages of 2 to 8 years. The onset is preceded by some prodromal symptoms. Temperature may be normal, or may run

up to 104°. Acetone is present in the urine before the attack. Vomiting comes without nausea or loss of appetite. Every bit of food is vomited, then serum and even blood. When bile comes, it usually means the end of the attack, which generally lasts a few hours. Vomiting may recur in a few hours. It has been known to recur after a few days, but, usually, the intervals are a few weeks or months.

The tendency to these attacks may last throughout childhood. Prognosis is good.

Treatment: Abstinence from food: hypodermoclysis (2-6 oz. twice daily). Saline enemata with 5i-ii of sodium bicarbonate twice daily. As soon as vomiting ceases, give sodium bicarb. Gr. xv q. 3 h. by mouth. Also give weak tea, barley water.

Catarrh of the intestines: This may follow gastric indigestion and may occur without it. It is caused by indiscretion in diet.

Symptoms: Colicky pains, diarrhea (3 to 10 stools a day), expulsion of gas. The stools are yellow, with yellow or white particles. Severe cases may resemble cholera infantum, or may be ptomaine poisoning. If left untreated, there is great loss of weight.

Treatment: First give a purgative, such as castor oil, citrate of magnesia, or Epsom salts. No food should be given. The child should be kept on water and weak tea, until the diarrhœa and colic stop. If diarrhœa persists, give codeine or opium. Return to the regular diet very gradually.

Chronic disturbance of digestion in older children has its origin in infancy. Irregular feeding and improper food are most important immediate causes. The children are constantly in a state of malnutrition. The appetite is poor. Some children are so intent on their amusements that they do not take sufficient time to eat, and swallow their food improperly masticated. Other children will refuse to eat at meal time, but will eat candy and fruit between the regular meal hours. This interferes with digestion of the previous meal and spoils any chance of a good appetite for the next meal.

The symptoms are pain in the epigastric region, or attacks of colic, poor appetite, frequent headaches, constipation, anæmia, malnutrition.

Treatment: Careful diet, only three meals a day, nothing between meals. The child must eat slowly. Do not urge the child to eat more than it takes willingly. Mothers have a tendency even to go so far as to bribe the child in order to force it to eat, though the stomach may be in no state to receive the food. Let the child have plenty of fresh air and outdoor exercise. Medication is of very little importance. We may give Dil. Hydrochloric acid with Elix. Lactopeptin as a vehicle, or Tr. Nuc. Vomic. with Mist. Rhei et Sodæ.

Catarrh of the large intestines: The condition may be localized in the colon, may ascend, or may be last stage of gastroenteritis.

Causes: Constipation, swallowing large pieces of meat, continuing sterilized milk too long.

Symptoms: Frequent bloody mucus, foul-smelling stools, tenesmus. The child may seem well otherwise. Prognosis is good.

Treatment: Castor oil, powdered rhubarb, or Comp. Licorice powder.

Diet: Tea, soup, zwieback, cereals, vegetables

(spinach, yellow beets), very little milk! Rectal irrigation with 1% alum, ½% tannic acid, 1-1000 silver nitrate. We may give tannigen 2-4 gr., bismuth subnitrate 5-10 gr. q. 3 h.

Acute colitis: In later childhood it may appear like regular dysentery, with symptoms of intoxication, and sometimes albuminuria. It may be improved without any difficulty, if treated early. It may come from persistent constipation (small, hard stools, covered with mucus and blood).

Chronic membranous or mucous colitis: This is caused by constipation and eating too large quantities of meat. It is found mostly in anæmic children. Palpating the abdomen, we may feel the cord-like colon, which is sore to the touch.

Treatment: Exclude meat from the diet, give only cereals, vegetables and milk. Colon irrigations may help.

Constipation in older children: Causes: Malformation, or anatomical anomaly of position of the rectum. Fissure in ano, etc., improper diet (insufficient bread, vegetables, cereals and potatoes, too much eggs, meat, milk and sweets), failure to respond to the call of nature, irregular attention to the bowels, insufficient exercise. There may be no symptoms, or the symptoms may be quite severe. Sometimes they may resemble those of meningitis. Thus we may have convulsions, tache cerebrale, stupor, fever, irregular pulse and loss of pupillary reflex. All these symptoms are relieved by a cathartic. Other patients develop anæmia.

Treatment: First find out the cause, attend to the diet, induce regular habit of attention to the bowels,

at the same time every day. Urge plenty of outdoor exercise. Daily massage of the bowels yields good results. Rectal irrigation is not advisable, unless colitis is present.

Medication: Russian mineral oil, one tablespoon, night and morning. Cascara, phenolphthalein, aloes, belladonna and strychnine, syrup of figs.

Proctitis: Inflammation of the rectum, occasionally found in children. It may be catarrhal, membranous, or ulcerative.

Causes: Constipation, colitis, worms, traumatism, diphtheritic infection, gonorrhœa, syphilis, tuberculosis.

Symptoms: Tenesmus, especially after a bowel movement. There is a discharge of muco-pus and blood.

Treatment: Laxatives, rectal irrigations, or local applications through a proctoscope. Constitutional treatment, if indicated.

Ischiorectal abscess: Causes: Constipation, anal fissure, worms, pruritus, hemorrhoids, polypi. The condition is not as common in children as it is in adults. The abscess is very painful and it may open externally and result in a blind fistula; or it may open into the rectum and be followed by a complete fistula. It may heal spontaneously, without the formation of any fistula.

Treatment: Wet dressing and incision. Early and free incision will prevent fistula.

Hemorrhoids: This affection is rather uncommon in children. Bleeding from the rectum is more frequently caused by the presence of polypi.

Intestinal tuberculosis: This is usually secondary

to tuberculosis of the lungs. It may possibly be primary, from swallowing infected milk or other food.

Miliary tuberculosis—tubercles are present in the serous coat.

Chronic tuberculosis—crater-like ulcers, particularly near the ileocæcal valve. The ulcers may become confluent and may cause the formation of scar tissue. The mesenteric glands are involved. The appendix is often affected, also the peritoneum, causing the intestines and the omentum to become matted together and form large masses.

Symptoms are not definite. There may be atrophy. In some cases there is diarrhea. Sometimes the stools are bloody. Examine the stool for tubercle bacilli (dilute the stool, centrifuge, decant, add alcohol and centrifuge again). If the peritoneum is involved, physical examination will disclose fluid, or the presence of a mass. If the appendix is involved, we get symptoms of appendicitis. The appendix may perforate and give symptoms of intestinal perforation. The patient may run an afternoon temperature, with gradual wasting.

Treatment: Prophylaxis, climate, tuberculin.

Congenital pyloric stenosis: There are two forms: Hypertrophic, probably caused by continued spasm of the pylorus.

Pyloric spasm, probably caused by dyspepsia.

Pyloric stenosis will give symptoms a few days to a few weeks after birth.

Hypertrophic: There is persistent vomiting of acid stomach contents. Practically no stools are present, with the exception of a small quantity of foul-smelling

substance, resembling meconium in appearance. The stomach may be distended and peristalsis may be visible. This is followed by copious vomiting. Under partial anæsthesia, a tumor may be felt on palpation in the region of the pylorus. There is progressive loss of weight. The child is apparently very hungry, and yet there is a fear of ingestion of food after the first mouthful. Ten hours after a meal there is still food in the stomach.

Pyloric spasm: The symptoms are less marked than in the above condition. Vomiting may stop for a few days. There is some stool present, which may be constipated, or diarrhœal. There is usually no tumor on palpation. It is rarely fatal.

Prognosis: The hypertrophic cases are generally fatal. Some of these, in which the hypertrophy is not too great, may in rare instances recover. Improvement, if it comes, usually takes four to twenty weeks.

Diagnosis: Stenosis of the œsophagus—Food regurgitates unchanged.

Stenosis of the duodenum—vomiting of bile.

Atresia of the pylorus—rapid emaciation and death. Unsuitable breast milk, or artificial food—Change to proper food is followed by immediate improvement.

Treatment: After ascertaining that the condition is not caused by overfeeding, change food. If the baby is breast-fed, get a wet nurse; if artificially fed, modify the quantity and quality of the food. If improvement does not follow, try to obtain a wet nurse whenever possible. May wash the stomach twice daily, and try to feed by gavage. If there is no improvement

and a small tumor may be felt under slight anæsthesia, operate.

The operation consists of a longitudinal incision through the hypertrophic ring cutting through the peritoneum and muscularis (Ramstead).

Appendicitis: Appendicitis is an inflammation resulting from an infection of the appendix, predisposed by previous irritation, caused by chronic constipation, or worms. This condition may also exist in association with some of the infectious diseases, such as tonsillitis, rheumatism, typhoid, or tuberculosis.

This inflammation may be catarrhal, purulent (empyema of the appendix), perforative, or gangrenous. It may result in localized abscess, or general peritonitis.

The local symptoms vary in accordance with the severity of the inflammation. In exceptional cases we find very mild symptoms with a gangrenous appendix.

The pain may be only a moderate sticking pain, or it may be severe and cramp like, requiring relief with morphine. The pain is usually felt in the right iliac region, but sometimes it is felt higher up. The pulse is more rapid in bad cases. A slow, weak, small pulse, with pallor cyanosis and low temperature, means sepsis. If the pulse is of normal quality and does not go above 100°, the case is mild. As a rule, the higher the temperature the severer the case.

Pulse and temperature rise when the patient is recovering from the shock of perforation.

Vomiting at the onset is present sometimes even in mild cases. When vomiting is repeated and persistent,

it means severe infection, gangrene, perforation. There may be constipation, or diarrhœa.

Objective symptoms: McBurney sign—Tenderness on deep pressure at a point midway between the umbilicus and anterior superior spine, a little towards the centre. Meltzer sign—While exercising pressure over the McBurney point, the patient is requested to raise his extended leg. This brings about a contraction of the psoas muscle. In the presence of appendicitis, this contraction is very painful.

A rectal examination will disclose the presence of a mass, or of tenderness.

Where perityphlitis or abscess is present, we get a board-like rigidity of the right rectus muscle. The rigidity is in proportion to the amount of inflammation present.

In advanced cases, there is a hyperæsthesia of the skin in the iliac region (head zone).

There is tendency to flexion of the leg. Extension is painful. If abscess is present, we may feel a mass. Sometimes it is possible to feel the cord-like appendix. Catarrhal or mild cases may recover in a few days. It may result in empyema of the appendix, with recurrent attacks, or persistent pain, with a slight rise in the temperature; or perforation. It may result in the formation of periappendical abscess, which may be absorbed and cicatrize, or perforate into the intestine, or into the peritoneum, causing peritonitis.

The gangrenous form may result in sepsis. The blood is characterized by a polynuclear leucocytosis.

Diagnosis: Pleurisy and pneumonia sometimes begin with pain in the region of the appendix. Typhoid fever may also begin with symptoms of appendicitis.

Other conditions that may simulate appendicitis are: Psoas abscess and perinephritis, intestinal tuberculosis.

Treatment: Ice bag to the iliac region, moist packs; enema; hypodermoclysis, or saline enema to stimulate leucocytosis.

Diet should be very moderate and fluid. Morphine should be used as sparingly as possible.

It is best to operate after the acute symptoms have subsided.

When severe symptoms persist and the general condition of the patient is not too poor, operate without delay. If abscess forms, wait for adhesions.

HERNIÆ

Umbilical hernia: Described elsewhere.

Diaphragmatic hernia: There is a weak spot in the diaphragm, through which the abdominal contents are forced into the thoracic cavity. Percussion of the chest posteriorly gives a tympanitic note.

Abdominal hernia.—Lateral: A weak spot, just above the crest of the ilium, between the transversalis muscle and the quadratus lumborum (Triangle of Petit), allows the escape of some of the abdominal contents.

Ventral: There is a separation of the two recti muscles. It is best to operate.

Femoral hernia: Midway between the spine of the ilium and the spine of the pubes, through the femoral ring. This form is rather rare in children.

Inguinal Hernia.—Congenital form: There is a direct communication between the peritoneal cavity and the tunica vaginalis. In other words, the peritoneal covering of the cord, instead of becoming obliterated, remains patent.

Upon standing, crying, coughing, or straining, the omentum, or intestines, easily find their way into the scrotum, causing the appearance of a swelling, which is readily reduced in the recumbent posture. This swelling is not translucent, and percussion gives a tympanitic note. If intestines are in the sac, reduction is accompanied by a gurgle.

This condition is frequently found in small and premature babies.

The majority of these close with palliative treatment.

Congenital funicular form: This form is the same as the above, only the sac does not extend beyond the external ring.

Infantile form: The hernial sac is located behind the tunica vaginalis, which in infants extends up as far as the internal abdominal ring.

Encysted form: Here, the hernial sac is invaginated in the tunica vaginalis, both sacs extending as far as the internal abdominal ring.

The acquired form in older children is the same as in adults. It may be direct (through the external ring), or indirect (through the internal ring and the inguinal canal).

It is usually reducible, rarely irreducible (contents adherent).

Symptoms: Usually there are no subjective symptoms. In acquired cases there is a sharp pain in the inguinal region upon its first appearance.

Physical signs:

The presence of a lump in the inguinal region.

This lump appears upon standing, coughing, or straining.

There is an impulse on coughing.

Percussion note-flat or tympanitic.

Not translucent.

Disappears in recumbent posture.

Sometimes the sac becomes overfull and tense and strangulation or incarceration is the result. This is accompanied by severe pain and symptoms of intestinal obstruction.

Diagnosis: Hydrocele — Translucent: Inguinal adenitis—Hard or fluctuating; aspirate. No intestinal obstruction.

Hydrocele of the cord—Hard, painless lump in the inguinal canal, which is translucent. Aspirate.

Undescended testicle—Its absence in the scrotum.

The congenital form is differentiated from the acquired by the history.

Treatment: Palliative—For infants, a skein of Saxony wool makes a good support. It is applied in the following manner: A skein of white Saxony is looped around the body just below the line of the crest of the ilium. The loop is adjusted so that it rests upon the external ring of the side affected. Tighten as well as possible and pull downward and backward along the inner aspect of the thigh on the same side. Then fasten to the horizontal turn of the wool posteriorly.

In cases of double hernia two separate skeins may be used. These may be washed and changed as often as may be found necessary.

In older infants and children we use a regular truss. If there is not a marked improvement after two or three years advise operation.

In cases of strangulated hernia try ice and taxis for not longer than 6-12 hours. If unsuccessful, urge operation without delay.

HYDROCELE

Congenital form: There is a direct communication between the tunica vaginalis and the peritoneal cavity.

Congenital funicular form: Same as above, but it does not extend beyond the external abdominal ring.

Encysted hydrocele of the cord. Forms a cystic tumor in the inguinal canal. It is very hard and may easily be mistaken for a gland.

Infantile form: The sac extends from the internal abdominal ring down into the tunica vaginalis.

Acquired, or vaginal form: Distention by an accumulation of serum in the tunica vaginalis proper.

The most important point is fluctuation and translucency of the tumor.

Treatment: The congenital form is treated by means of a support or truss, just as if it were a congenital hernia.

The encysted form is treated by aspiration, which may be repeated, or supplemented by the injection of a few drops of Tr. Iodine.

The infantile form should be aspirated. After aspiration, rub the sac between the two fingers over the needle still in the sac, to roughen the surface of the walls of the sac.

Aspiration may be repeated a few times, at intervals of two weeks.

It is rarely necessary to resort to operation, or even the injection of irritants.

The vaginal form is the same as in adults and is treated by aspiration, injection or irritants, or operation.

ANIMAL PARASITES

Nematodes

Ascaris Lumbricoides (roundworm): Round salmoncolored body, pointed at each end. The female produces 40 to 60 million eggs (1/20 mm. long). Embryos develop within four to eight weeks. Found in dirt. The eggs after being swallowed develop in the intestines. The worm that develops is usually 2-6 inches

long, and of the thickness of an angleworm. About six worms are usually present in the intestines at a time.

The condition is recognized when the worms are found in the stools, or when a microscopical examination shows the presence of the eggs.



Egg

Symptoms: Abnormal cravings for unusual kinds of food, transient abdominal pains, vomiting, itching in the nose. The worms may migrate into the lungs and cause cough, atelectasis, and even pneumonia. Biliary ducts may be invaded and cause symptoms of biliary calculus. A large mass of worms may cause symptoms of intestinal obstruction. The mucous membrane of the intestines may become ulcerated, or infected with abscess formation resulting. The worm may migrate to other parts of the body.

Other possible symptoms are: irregular pulse, urticaria, diarrhœa, nervous twitchings, convulsions.

Blood count shows a large number of eosinophiles. Treatment: Santonin, in lozenges, powder or tablets. Dose, ¼ gr. to 1 gr. three times a day for several days. Also purge with Castor oil or Epsom Salts.

May give:

Ext. Spigelia fl 15 c.c. Mist Rhei et Sodæ ad 60 c.c. Sig. 3i t i d p c.

Examine for eggs after several weeks.

Oxyuris Vermicularis (threadworm, pinworm): The stool has the appearance of being covered with



Egg

a great many white threads. The worm is ½-½ inch in length and is spindle-shaped. A good many eggs are found in the fæces. They may also be found in the dirt under the finger nails. They are .05 mm. long. The principal symptom is itching around the perineal region. Irritation may cause eczema. The worms may

migrate into the vagina. This condition may also be a cause of enuresis and masturbation. A rectal examination will often bring out some of the worms.

Treatment: Cleanliness and frequent baths. Enemata with infusion of Quassia, or I oz. of vinegar to a quart of water, or with limewater. These should be continued until the worms disappear from the stools. Internally we may give Santonin and Calomel aa gr. 1/4 t i d p c.

Trichocephalus Dispar (Whipworm): This is a thready worm about I inch or more in length. The

Egg

head and neck are thin, and take up two-thirds of the length of the body. The posterior third contains the sexual organs.

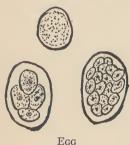
The worm attaches itself firmly to the mucous membrane, and causes enteritis.

The egg is characteristic. It is narrowed at each end, like a corked neck of a bottle.

The infection is carried by dirty water, or earth dirt.

Treatment is the same as that of roundworm or threadworm.

Anchylostoma Duodenale (Hookworm) (Uncinaria): This worm inhabits the duodenum, or upper ilium.



200

It is most frequently found in those that work in excavation (tunnels, etc.). It is less than ½ inch in length. The mouth has hook-like teeth. Through the grayish body the intestinal tract, filled with blood, is perceptible. The eggs (found in the fæces) are characteristic. They are .05 mm. in length.

The chief symptom is severe anæmia.

Treatment: Thymol V -XX gr., a saline cathartic being administered two hours before and after the dose.

Trichina Spiralis: The source of infection is pork and sausages. The swine get it from infected rats. The worm is ½ mm. wide and 2-4 mm. long. The encysted trichinæ get into the intestinal tract. After two or three days the male and female meet. After

four or five days the female begins to deposit embryos, and discharges about 1,500 of these during the following four or five weeks.

These embryos are 1/10 mm, long and 1/200 mm, wide.

They pass out in the fæces, or migrate directly to the muscles, or indirectly through the circulation, or lymphatics. In the muscles they grow to the size of 1 mm. and become encysted, and either live for years, or die. The capsule becomes calcified.

Symptoms—At first, there is diarrhæa, vomiting and a slight rise in temperature. Later, the temperature is high and the patient complains of pains all over the body. The muscles swell and are painful. The eyelids become temporarily ædematous, pupils dilated and fixed.

The child becomes sleepy, rarely restless. The outcome is death, or protracted recovery.

Diagnosis—We must distinguish from acute myositis. Examine the stools. Sometimes it may be necessary to excise a section of the muscle.

Treatment—Give Castor Oil repeatedly; then glycerin 3i-ii q. 3 h. May give:

Benzol . I.
Muc. Acaciæ 12.
Aq. Menthæ pip. ad 60
Sig. 3 i q. 2 h.

Cystodes (Tapeworms)

. Tænia Solium (armed): 6-12 ft. long. The head is of the size of a pinhead. It has four suckers and at the tip of the head there is a circular row of hooks.

The eggs are round and .03 mm. in diameter.

It is acquired through eating pork, containing living embryo cysts.

Tænia Saginata (mediocanellata): 18-24 ft. long. It is acquired through eating infected beef.

The head may be 2 mm. thick, showing a brown pigmentation, four suckers and no hooks. The eggs are smaller than those of tænia solium.

Bothriocephalus latus (broad, the links are broad and narrow): Length 30 ft., or longer. The head is wedge-shaped. The eggs are plentiful in the fæces (oval, .07 mm. long).

The embryos swim in the water and are ingested by fish, and encysted in them. This variety is, therefore, contracted by eating fish.

Tænia Cucumerina (dog, or cat tapeworm): 4-12 inches long. The worm is provided with a head and four suckers. Children who play with cats or dogs are apt to become infected.

Tænia Nana: One inch long. Found in Italy. Children are sometimes infected.

All tapeworms present a head, neck and links. The neck is never longer than I cm. The links contain the sexual organs, which are packed full of eggs. The body grows in segments, or links, from the head down, each succeeding link being broader than the one above. The head becomes attached to the mucous membrane of the intestines.

Groups of segments are discharged in the stools. They are gray in color and are sometimes mistaken for false membrane (mucous colitis). The body continues to grow as long as the head remains.

There may be only one worm present in the intestinal canal, or there may be two or three and even more.

Symptoms: Anæmia, dyspepsia, choreiform, or epileptiform symptoms. In rare cases of bothriocephalus latus, we may get a very severe and even fatal form of anæmia.

The patients usually have a ravenous appetite, and may have indefinite nervous symptoms. Blood shows an increase in eosinophiles.

Diagnosis: Examine the links and look for eggs in the stools. Give a cathartic, if necessary, to bring them out.

Treatment: Give castor oil and bland diet. May add onions and garlic to the diet. The next day, give a cup of tea, followed an hour later by the Felix Mass mixture (7 % of Felix Mass for each year of life, the dose not exceeding 13).

Felix Mass mixture:

Res. Aspidium (Felix Mass)	3ss
Sp. Chloroform	π_{xv}
Sp. Terebinthinæ	v
Muc. Acaci	$\bar{5}$ ss

Divide into 2 doses given 2 hours apart. Instead of Felix Mass we may give ½ lb. of pumpkin seed with pomegranate (gr. LXXV, macerated for 24 hours in 6 oz. of water), made into a decoction and given in four doses during the day.

Tænia Echinococcus: The infection comes from a dog fed on meat with echinococcus cyst. When the egg reaches the intestinal tract the embryo becomes free. Then through the lymphatics, or circulation, the em-

bryo migrates to different organs in the body, preferably the liver. There it becomes encysted and surrounded by a connective tissue capsule. When in the peritoneal cavity, no protective capsule is formed. Usually it gives no evidence of its presence until large enough to cause pressure.

The main cyst has smaller cysts springing from its parenchyma. These are surmounted by hooklets and four suckers. The daughter cysts may have grand-daughter cysts forming within them.

The cysts may be multilocular. This means that a great number of cysts is imbedded in the large cyst. This cyst is about the size of an orange and is filled with a jelly-like substance.

When fluid escapes into the peritoneal cavity, the patient may get persistent attacks of urticaria, or else may develop a fatal toxemia, or pyemia.

Cysts may remain in the body for years without giving any symptoms, or they may dry up.

Large cysts, giving pressure symptoms, must be operated upon.

DISEASES OF THE PERITONEUM

Acute peritonitis

Pneumococcus: The infection enters through the peritoneal wall, the appendix, Fallopian tubes, circulation, or directly from the pleura, in cases of concomitant empyema of the chest.

Symptoms: Abdominal pain, vomiting, diarrhœa, distention of the abdomen with presence of fluid. The pus usually becomes encapsulated, collecting in the antero-inferior part of the abdomen. If no incision is made it may ooze out through the umbilicus and even result in spontaneous recovery.

The pus is thick and greenish.

The blood picture is that of leucocytosis.

If not operated, it generally results in the wasting of the patient, or pneumococcus septicæmia.

Diagnosis: Appendicitis—symptoms are localized, and there is no fluid in the peritoneal activity.

Typhoid—Widal reaction; there may be other symptoms of typhoid.

Tuberculous peritonitis—Slow onset and blood count shows no leucocytosis.

Treatment: Incision and drainage.

Streptococcus peritonitis: This form may be primary, or may follow some infectious disease, particularly scarlet fever.

The onset is severe with pain, fever, vomiting, severe

diarrhœa and distention. Usually fatal in seven days.

The pus is thin and reddish yellow. The process rarely becomes encapsulated.

Prognosis is very bad.

Treatment: Incision and drainage.

We may try polyvalent, or autogenous vaccine.

Gonococcus peritonitis: This form is rare. It may be mild or severe.

Vaginal discharge is present.

Even bad cases may get well.

Do not advise any operation, unless the case looks desperate.

The case may look like appendicitis.

Tuberculous peritonitis

Serous: Onset is slow. The abdomen is distended with fluid. General health is not much affected at first. It may disappear and recur. The patient may get well permanently, or may in time become emaciated, with development of tuberculosis in other parts of the body.

Sero-fibrinous: The tubercles become large and caseous.

The omentum and intestines may become matted together, and form distinct masses.

Symptoms: Indefinite abdominal pain, nausea, diarrhœa, emaciation.

The physical signs depend on the presence of fluid and tuberculous masses.

Treatment: For the serous variety, the surgical procedure of incision, evacuation and closure has resulted in some cures.

Treatment is otherwise the same as in tuberculosis elsewhere, i. e., climatic, dietetic, Thiocol, etc. Tuberculin.

Tumors of the peritoneum: May have: endothelioma, sarcoma, lymph cyst, chylous cyst, or dermoid cyst.

DISEASES OF THE LIVER

Jaundice: Catarrhal, or Infectious.

Other causes: icterus neonatorum, congenital obstruction of the biliary ducts, biliary calculus (rare in children), sepsis, malaria, infectious diseases (pneumonia, scarlet fever), drugs (santonin, male fern). Cirrhosis of the liver, hæmolytic jaundice.

Catarrhal jaundice: This is always associated with gastroduodenitis, which seems to be of infectious origin.

Symptoms: Chills, fever, vomiting, gastric pain, constipation, or diarrhœa, light colored stools, dark urine with a trace of albumin.

The liver and spleen are enlarged, the pulse is slow. The fever usually lasts a few days and recovery follows. Jaundice disappears in two to four weeks.

Epidemic jaundice (Weil's disease): This seems to be an epidemic infectious disease.

The symptoms are similar to those of the catarrhal form, perhaps more severe and accompanied by hemorrhages from the mucous membranes.

Treatment: Initial dose of calomel, followed by a daily dose of sodium phosphate, given in water, every morning. When vomiting is severe we may use sodium bicarb. and cerium oxalate aa 2-5 gr. q. 2 h.

May also give a daily cold water enema. Later Mist. rhei et sodæ may be given. Sometimes vomiting

is so persistent that it is necessary to give lavage before it stops.

Diet: At first only water; later, barley or oatmeal gruel, milk, zoolak.

Acute yellow atrophy: Rare in children. Etiology is indefinite. It may be apparently primary, or may follow typhoid, general septic condition, or erysipelas, or phosphorus poisoning from matches.

Symptoms: Jaundice, fever, somnolence, convulsions, coma, hemorrhages, rapid diminution of the size of the liver in a few days to two weeks. Leucin and tyrosin crystals are found in the urine. The outcome is always fatal.

Fatty liver: Present in acute, or chronic infectious diseases, also in atrophic infants.

Amyloid liver: Found in cases of prolonged suppuration.

Abscess of the liver: In the tropical region, it may be associated with dysentery. Other causes: migration of the round worm, appendicitis, trauma, typhoid fever, pyemia, influenza, tuberculosis.

Symptoms: Swelling, pain, fever.

The traumatic form may get well; the others are usually fatal.

Treatment: Surgical.

CIRRHOSIS OF THE LIVER

Varieties:

- I. Atrophic (alcoholic) (rare) (Laënnec's cirrhosis)
- 2. Hypertrophic (Hanot's cirrhosis)
- 3. Circulatory
- 4. Congenital obliteration of the bile ducts
- 5. Syphilitic

Atrophic: The liver is small and contracted. The symptoms are: Dyspepsia, tympanitis, ascites, large spleen and a small hard liver, diarrhœa, loss of flesh, hemorrhage, œdema of the lungs. Slight jaundice. The course of the disease is subacute and shorter than in adults.

Hypertrophic: This form is probably of infectious origin. The liver is large and of wooden consistence; the spleen is large. Ascites is usually not present, but may be marked in some cases. There may be attacks of fever with liver pain. Jaundice is marked. The growth of the child is arrested, this being more apparent owing to the large size of the abdomen, associated with joint deformities, especially the fingers and toes.

Sometimes the spleen is very large and the liver is not so very large. The course of the disease is slow, dragging through years. The duration is shorter in infants.

Cardiac, or cardio-tuberculous cirrhosis: This form is associated with pericarditis (rheumatic, or tuberculous).

The liver is large and fatty (smooth, slightly granular), covered with thickened peritoneum. A cross-section of the liver shows it to be of nutmeg appearance. The spleen is enlarged and also covered by thickened peritoneum. The abdominal peritoneum may also be thickened.

The ascites is uncontrollable and is not affected by digitalis.

The course of the disease is progressive and terminates fatally.

Hypertrophic cirrhosis due to congenital obliteration of the bile ducts: This condition is caused by stagnation of the bile.

The liver and spleen are enlarged and there is increasing jaundice from birth. There are hemorrhages from the umbilicus and the mucous membranes, fever and convulsions. Ascites develops, if the child lives long enough. Death usually occurs in fourteen days after birth. Some cases may drag out a few months.

Treatment: Milk diet, mixed treatment (mercury and iodides).

When ascites persists we may try Talma's operation of venous anastomosis.

Treat symptoms as they arise.

Tumors of the liver: Angioma, cystic degeneration, adenocarcinoma, carcinoma, sarcoma, echinococcosis.

DISEASES OF THE RESPIRATORY ORGANS

Coryza: This is a catarrhal condition of the Schneiderian membrane, caused by some form of acute infection.

Predisposing causes are: warm clothing, cold and damp weather, adenoids. Exciting causes are: Streptococcus, or staphylococcus infection, influenza, measles, diphtheria, erysipelas.

There is a swelling of the mucous membrane, followed by a discharge of mucus, seromucus, or mucopurulent in character. There is an obstruction to nasal breathing and other symptoms, depending on the associated disease.

Treatment: Treat associated disease. Locally, we may apply an instillation of i% silver nitrate, or 3% protargol, or 5% argyrol.

Steam inhalation with Tr. Benzoin. When obstruction to breathing interferes with nursing, use a spray of weak solution of cocaine and adrenalin.

Chronic rhinitis: Causes: Adenoids, polypi, foreign body in the nose, congenital deformity of the nasal septum.

There is a constant discharge of mucus from the nose and interference with nasal respiration. The condition improves in the summer. The irritation of the constant discharge causes eczema of the upper lip.

Treatment: Removal of the causes and tonics.

Chronic atrophic rhinitis follows chronic hypertrophic rhinitis (Œzena).

This affection is common in scrofulous and anæmic children.

The nasal cavity is wide open. There is a feetid discharge, with a tendency to formation of crusts and slight bleeding.

Treatment: Antiseptic sprays.

Syphilitic rhinitis: This is one of the earliest symptoms of the disease. It appears between the 3rd and the 6th week, rarely after the third month. It is present both early and late in the disease.

Usually there is only catarrh, but there may be mucous patches. The discharge is seromucus and slightly bloody. It improves with constitutional treatment. In neglected cases gummata form, with ulceration and cicatrization and frightful deformities. (True cases of œzena.)

Membranous rhinitis: This is a diphtheritic infection. There is a mucopurulent bloody discharge with nasal obstruction. In the presence of such a discharge, always take a culture. The infection may spread to the throat. Usually there are no marked constitutional symptoms and cases are frequently overlooked.

Treatment: Give antitoxin. Spray nose with a bichloride sol., 1-1000. May also give a 1% or 2% sol. of carbolic acid internally, 1 teaspoon q. 2 h.

Epistaxis: Bleeding is most frequently from the anterior septum, but may come from any part of the nasal mucous membrane.

Possible causes: Traumatism, coryza, picking of nose (scab), scurvy, hæmophilia, purpura, severe anæmia, pertussis, diphtheria, typhoid.

Treatment: With the aid of adrenalin try to find the bleeding point and touch with silver nitrate. If that is not possible, have the patient hold his head forward, allowing the blood to drip until a clot forms, then cut the clot even with the anterior nares. May also try the application of cold on the back of the neck, at the same time compressing the nose just below the bony bridge. If all these efforts fail, then we may pack the nose anteriorly, or by means of a posterior plug. This latter is done by introducing a string through the nose, with the aid of a catheter, until the string drops below the uvula; get hold of the string through the mouth, withdraw the catheter, then to the oral end attach a gauze plug, pulling this back into the posterior pharynx by drawing on the nasal end of the string. While drawing on the string, introduce your anterior packing. Order only cold fluid diet. Remove plugs after 24 hours.

Treat the general condition.

Catarrhal spasm of the larynx (False croup): The affection is rare under 6 months, common after that until the age of 3 years, but rare after the 5th year. It is frequent in children with adenoids, long uvula, or rhinitis. Exciting causes are: cold, indigestion, constipation.

Symptoms: Croupy cough, hoarseness, attacks of stridulous breathing, coming on at night (usually about 12 o'clock), lasting three or four hours, of varying severity, prostration, fever (101°). These cases of croup are never fatal. Unless arrested by treatment, the attacks of stridor will be repeated the second and third night, though less severe than the first attack.

It is often mistaken for diphtheria. Chloroform will relieve catarrhal croup, but not diphtheria (membranous croup).

Treatment: During the attack administer some emetic, such as Syr. Ipecac 3i-ii, or Vin Antimony, π_{xy} , which may be repeated once, or twice. We may use the inhalation of steam with Tr. Benzoin Comp.

During the next day, give ipecac and antimony aa gr. 1/100, q. 3 h., and at bed-time give antipyrine gr. ii, for a child 2 years old.

In some severe cases, it is necessary to do an intubation to relieve the stridor.

Acute catarrhal laryngitis: This may be caused by cold, irritative gases and eruptive fevers. The patient may not feel sick, or have any fever. The temperature may depend on the associated condition (influenza, etc.). Symptoms are hoarseness, loss of voice, croupy cough. We may get attacks similar to laryngeal spasm.

Duration of the affection is one week, or longer, depending on the associated condition.

Must be differentiated from diphtheria. Sometimes it is safer to administer diphtheria antitoxin before arriving at a definite diagnosis.

Treatment: Cold compress to the neck. Medication, the same as in catarrhal croup.

Membranous laryngitis (Laryngeal diphtheria, True croup, Membranous croup): This may be primary, or secondary to diphtheria of the pharynx.

The onset is the same as in catarrhal croup, only slower. Temperature is 100°-101°. In 12 hours the symptoms become worse and in 24 hours they become fully developed. There is stridulous breathing, with

retraction of the chest and supraclavicular spaces, and cyanosis.

The local symptoms are severe, before the general symptoms have a chance to develop. In bad cases death may occur in 24-36 hours.

The child may develop bronchopneumonia, which is a frequent cause of death. We must differentiate from retropharyngeal abscess, foreign body, pneumonia with laryngitis.

Treatment: Antitoxin, intubation (if stridor continues to increase).

Tracheotomy, if intubation fails, or is not available. We may also try the inhalation of calomel fumes (gr. xv), with tent over the bed. Protect the face, air the room after inhalation for 15-20 minutes.

Submucous larvngitis (cedema of the larvnx): Causes: Inhalation of steam, or some irritating gas, acute laryngitis, retropharyngeal abscess, erysipelas. There is an inspiratory dyspnœa with attack of suffocation. We may recognize the ædema by digital examination

Treatment: Ice, swallowed and applied externally. Scarification of the cedematous parts. As a last resort, do a tracheotomy.

Chronic laryngitis: Most frequently caused by adenoids

Syphilitic laryngitis: Rarely found in children.

New growths of the larynx: Papilloma is not uncommon in infants. At first, we get symptoms of laryngitis, paroxysmal cough and hoarseness; later, dyspnœa. Prognosis is not favorable, owing to tendency to recurrence.

It is a small whitish growth, sessile, or peduncu-

lated. If pedunculated, it may be removed by the oral route, but, if sessile, it is necessary to perform a thyroidotomy.

Congenital stridor: This is caused by an anomaly of the epiglottis. There is an almost constant inspiratory crowing sound, heard soon after birth. This gradually disappears during the first two or three years of life.

Air goitre: This may be spontaneous or traumatic. There is an air cyst on the side of the neck (subcutaneous emphysema).

Foreign body in the larynx: This is manifested by a sudden paroxysm of coughing and dyspnæa. The foreign body may be arrested in the larynx or may be carried down into the trachea and bronchi, especially the right bifurcation. The symptoms require urgent treatment. Turn the patient upside down, at the same time striking him on the back. We may have to do a bronchoscopy, tracheotomy, or laryngotomy without delay.

If the foreign body is in the bronchus, we get cough, pain in the chest, absence of breathing in one section of the lungs, or in the entire lung. It may cause the formation of an abscess, with hectic fever and death after a few weeks, or months; or a great paroxysm of coughing may expel the foreign body. The condition is sometimes diagnosticated as tuberculosis.

DISEASES OF THE LUNGS

Acute catarrhal bronchitis: Predisposing causes: Malnutrition, rickets, warm rooms, influenza, other infectious diseases, adenoids. Exposure to celd acts as an exciting cause.

Mild cases: Duration is about one week. There is a slight rise in temperature, 101-102°, for two or three days; later, 100°. It is often preceded by coryza and pharyngitis. Mucus is coughed up, or swallowed, or sometimes vomited. Upon auscultation, we hear coarse and sonorous râles. Breathing is somewhat increased in frequency. Sometimes there is also vomiting and diarrhœa. The attacks are often recurrent.

Severe cases: These may resemble bronchopneumonia.

Fever is 103-104° at the onset, going down to 100° in 36 hours. There is dyspnœa, cyanosis, dullness, apathy, stupor. These symptoms may come on very suddenly and cause death within a few hours. Dyspnœa is caused by a collapse of the lungs, due to obstruction of the bronchi by mucus.

Physical signs: Percussion note may be tympanitic; auscultation gives coarse, sonorous râles; also subcrepitant râles, which disappear on coughing.

In older children the symptoms are not so severe. If the child is kept out of doors, the case may become subacute or chronic.

Rarely, the cases may run into bronchopneumonia,

especially when associated with measles or pertussis.

Treatment: The room should be well ventilated. Keep the child in bed, with care to keep the feet warm.

Locally—Mustard paste over the entire chest, 5-8 minutes, every 3 hours. Or Priesnitz compress (tepid wet pack to the chest, one hour on and two hours off).

Internally—cathartic—castor oil, or calomel.

Antipyrin or phenacetin, with aspirin, or sodium salicylate aa gr. i (for 1 year old) q. 4 h.

Or, sol. Ac. carbolici 1-3%, for child 1-3 years respectively, dose 5i q. 2 h.

Expectorants may be used later, if necessary. These may be a combination of Syr. Ipecac, Vin Antimony, Syr. Senega, Syr. Squills, with Potas. citrate, or Ammonium muriate. Also:

Thiocol (Roche)	2.00	5 ss
Tr Opi Camph	10.00	5 iiss
Syr Tolu	30.00	5 i
Syr siml. ad		5 ii
Misse et Sig. 3i q. 4 h.	(for child	1 2 yrs.)

For cyanosis spanking and mustard baths.

Fibrinous bronchitis: This form of bronchitis may be caused by diphtheria, but there is another form, acute, or chronic, with obscure etiology.

The characteristic symptoms are the expectoration of bronchial casts, with severe dyspnca. Otherwise, the symptoms are the same as in ordinary bronchitis. The tube casts may be entire, or they may come out in little balls, which unfold in water.

Prognosis is bad, there being a mortality of 75% in acute cases.

Chronic cases may last for months, or years, without affecting life.

Treatment: Steam inhalations, pilocarpine. In chronic cases we may give potassium iodide.

Chronic bronchitis: Rickets, malnutrition, lymphatism; poor environment may cause an acute attack to persist. Other causes are: measles, whooping cough, tuberculosis, heart disease, late manifestation of syphilis, interstitial pneumonia with or without bronchiectasis, deformities of the chest.

Symptoms: Cough, with expectoration of variable quantities of mucopus, especially at night. Very large quantities of sputum at one time means the presence of bronchiectasis.

Afternoon temperature and emaciation mean tuberculosis and repeated examinations of the sputum for tubercle bacilli should be made.

Treatment: Improve the environment, if possible. Avoid sedatives. Give cod-liver oil, creosote, terebene, potassium iodide.

Nervous cough (reflex cough): This cough may be associated with elongated uvula, nasopharyngitis, dyspepsia, or cardiac disease.

It is usually a persistent night cough, causing insomnia.

Tuberculous bronchial glands and abscess following Pott's disease may also cause a cough. In rare cases otitis will cause a cough. Treat the cause. We may give antipyrine and bromides at night.

Asthma: This is very similar to the adult condition, but is uncommon before the age of seven years. It accompanies, or is followed by bronchitis. Etiology

is the same as in adults: heredity, locality, irritating vapors, heavy underclothing.

The symptoms are similar to those of capillary bronchitis, with fever, fine râles, dyspnœa, but, instead of running the regular course, the symptoms disappear in 24 hours. The attacks will recur. There may be attacks of suffocation, which in infants may turn out fatal. Cases usually follow bronchitis, and are frequently found in rachitic children.

Asthma may last two to six weeks, or may persist for months, and yet complete recovery, without recurrence, is possible.

Physical signs: During dyspnæa the respirations are 50-60.

We get sibilant, sonorous and stridulous breathing. The child appears cyanotic. The percussion note is somewhat tympanitic, indicating the presence of some emphysema. This emphysema may disappear, when the child recovers. Asthma may not affect general health. The accompanying cough is usually only moderate, with very little expectoration.

Hay fever, which is frequently associated with asthma in adults, is rare in children before the age of 10 years.

Asthma may cause thoracic deformity (barrel-shaped chest).

Prognosis is better in younger children. It is best in catarrhal asthma.

Treatment: Treat local condition; removal of adenoids, if present, is especially important. During the acute attack, we may use inhalation of fumes of nitre paper, or stramonium leaves; or adrenalin (-1-1000), 1-5 drops hypodermatically. Internally, administer:

Potassium Iodide	3.00	gr. 45	
'Atropine Sulph			
Fl. Ext. Grindelia Robusta	5.00	TU 75	
Syr. Pruni Virgin	30.00	I OZ.	
Aquæ q s ad	50.00	2 oz.	
Dose I teaspoon q. 4 h. for 5 year old child.			

In bad cases we add morphine, or chloral.

Between attacks we may give cod liver oil and creosote. Change of climate is beneficial.

Bronchopneumonia: Bronchopneumonia may be primary or secondary.

Secondary case may follow measles, pertussis, diphtheria, bronchitis, influenza.

Primary cases are caused principally by the pneumococcus. In secondary cases, there is a mixed infection. The bacteria found are streptococcus, staphylococcus, bacillus of Friedländer. Streptococcus plays the most important rôle in secondary cases.

Symptoms: There is no typical course, but the disease may be grouped into several types.

Acute congestive type: The onset is sudden, with death in 12 to 24 hours.

There is extreme prostration, cyanosis and dyspnœa. The temperature is 104°-7°, rising before death. The pulse is very rapid. There is usually stupor and sometimes convulsions before death.

There are usually no physical signs, except perhaps roughened or diminished breathing on one side.

The symptoms are caused by the pneumococcus infection and the congestion of the lungs.

If the child can overcome the severe onset, it may

recover after three or four days, or it may develop the regular bronchopneumonia.

Acute disseminated bronchopneumonia (capillary bronchitis): These cases are as severe as the preceding. The patient usually recovers except in cases of great feebleness.

Temperature is 102°, respiration 80-100. There is also cyanosis, dyspnœa, prostration, and excessive cough.

Physical signs: Percussion note may be exaggerated. Breathing may be feeble and diminished or sibilant. We also usually find subcrepitant and coarse râles. There are no signs of consolidation.

Death may occur in three or four days, or improvement and recovery at the end of a week, or development of consolidation of the lung.

The common type: Only 10% are preceded by bronchitis.

The onset is usually sudden. Temperature is high (104°). Sometimes there is vomiting and sometimes covulsions. Prostration is not very marked at first. Respiration 80-100. Pulse 140-160. The patient looks cyanotic.

Cough is more constant than in lobar pneumonia. The temperature is usually remittent. Sometimes the temperature is low, particularly in weak children. Pain is not a common symptom.

Convulsions are not as common as in lobar pneumonia, but frequent in cases following pertussis, usually with a fatal outcome.

Delirium may be present at any stage of the disease. Sometimes the case may look like meningitis (meningism), Gastroenteritis is not uncommon, making the case more serious.

Gas in the stomach may interfere with respiration, and cause cyanosis.

The urine shows a trace of albumen, if the temperature is very high.

Duration of the disease is one to four weeks.

Physical signs: A. No consolidation—slight dullness, or no change in percussion; râles—coarse, or fine; diminished breathing.

B. Incomplete consolidation—Percussion slightly dull or tympanitic, or normal, no increased fremitus, diminished, or broncho-vesicular breathing, increased voice.

C. Complete consolidation—Dullness may or may not be marked.

Pure bronchial breathing and voice, blending at the edges with fine râles. Râles all over. Later the physical signs may simulate those of lobar pneumonia. The signs are usually found in the back, extending forward as far as the axillary line. Breathing may be diminished or absent, unless inspiration is forced, and then it is bronchial.

Fremitus is increased. Friction sounds may be heard.

In some cases signs of consolidation are absent, when areas of consolidation are small and central.

Protracted cases: These may be primary, but they are not uncommon after pertussis, or scarlet fever.

At first the case appears like a regular bronchopneumonia for two or three weeks. Then the temperature comes down to 100-103° and the lung does not resolve; in fact, the consolidation spreads. There is indigestion and asthenia, and there may be an exacerbation of the acute condition. Breathing is bronchial (like cavernous) and friction and bronchial râles may be heard. Punctate hemorrhages may appear on the abdomen and extremities, which generally mark the case as fatal. Death usually follows after four or five weeks. Recovery is possible and may be complete. The child may never become actually strong.

Relapses may take place and the case looks like tu-

Consolidation may disappear after a few weeks, but râles and friction sounds persist for a long time. Convalescence is very slow.

Secondary pneumonia complicating pertussis: The course of the disease is slow. Recovery is slow. Consolidation may persist for weeks or months, and yet be followed by recovery. Sometimes there may be cerebral symptoms, and then the case is fatal.

Pneumonia complicating diphtheria: It usually appears two days after laryngeal diphtheria. Generally we find it associated with bronchial diphtheria. Signs may be obscured by laryngeal breathing and death occurs before the development of consolidation.

Pneumonia complicating measles: This may appear at invasion, but is more common with the eruption.

Pneumonia complicating influenza: In some cases there may be fever and prostration a few days before the physical signs, and then pneumonia may run a regular course. In other cases, pneumonia may last two to four days, with very severe symptoms and high temperature and recovery may follow.

Pneumonia following ileocolitis: Slow cases, some-

times not noticed. There is rapid respiration, dyspnœa, cough and pain. May vary in severity.

Complications: Pleurisy, empyema, abscess of the lung, pericarditis, endocarditis, nephritis (rare), meningitis (rare), gastroenteritis, stomatitis.

Prognosis is grave, especially in secondary cases. Continued high temperature is more favorable than remittent temperature, as it implies pneumococcus infection: In rickets and poorly nourished babies, prognosis is bad. The younger the child the more serious the prognosis. If the stomach is in good condition, prognosis is favorable. Nervous symptoms (convulsions, stupor, etc.) are not serious at the onset, but are very grave at the end.

Treatment: Bed, fresh air, mustard pack, or Priesnitz compress. Regular feeding and in reduced quantity. Give plenty of water to drink.

Stimulation should be judicious. We should not overstimulate. It is frequently unnecessary to use any stimulants, particularly when the temperature is very high.

Brandy 3ss-1, a day, for 1-year-old baby, is of special value just before and during collapse. Instead of brandy, we may use Tokay or sherry wine. Camphor gr. 1-5 in æther or oil is a valuable stimulant. A 10% solution should always be on hand, to give hypodermatically, in the emergency. Caffeine sodium benzoate, 25% Sol. should also be kept on hand (Dose, gr. 1-4). Digalen and Tr. Digitalis 1-5 m will be found useful where early stimulation is required. Strychnine and nitroglycerin may sometimes be useful adjuvants, but are not as important as the above.

Hydrotherapy—Tepid sponge or pack will be found refreshing and stimulating.

If the child suffers a great deal of pain, we may give ½-I gr. antipyrine.

Attacks of collapse—These are not serious in the beginning of the disease, but are extremely grave later. Give a hot mustard bath with vigorous friction; also Camphor and æther, strychnine, nitroglycerin and oxygen.

For protracted cases: Diet and tonic treatment: inhalation of creosote (āā creosote, alcohol and chloroform).

We may suspect tuberculosis, but non-tuberculous cases are more common. If there is no temperature, advise change of climate.

Lobar pneumonia: Lobar pneumonia is an infectious disease, caused by the invasion of the body by the pneumococcus (micrococcus lanceolatus).

It is found most frequently in children between the ages of 2-6 years. Male children are more frequently affected. It is most common in the spring and winter months. It may affect children who are in perfect health. The lower left lobe is most frequently involved; next in frequency is the upper right lobe and lower right lobe.

Symptoms: Typical course—There is general malaise for a few hours, which is followed by a sudden rise in temperature. There is prostration, vomiting. The pulse is full, 120-130, sometimes a sharp pain in the side, restlessness (delirium), dyspnæa, cough, thirst, etc. On the second day, patient is no better, but on the third day he is more comfortable.

The symptoms continue for six or seven days and then, after a long and natural sleep, the child awakens, feeling much improved, with a pulse of 90 and normal respiration. In one week the child is out of bed, and inside of a month out of doors.

Sometimes the attack is of very short duration, lasting three or four days.

Abortive type: It begins like the ordinary form, but on the second or third day the temperature comes down, and the physical signs disappear. The case probably does not go beyond the stage of congestion. It means that the patient has a strong power of resistance.

Prolonged type: Usually lasts 10-15 days. It may or may not be due to spreading of the disease.

At the onset, vomiting is common. In the summer diarrhoea is frequent. Sometimes we get convulsions. Cough varies in intensity. Chill at the onset is rare in children under the age of 5 years, and even in older children it is uncommon. Pain may last throughout and be the most prominent symptom, or may moderate and be only at the onset. Pain may not be felt in the chest, but may then be referred to the iliac region, thus resembling appendicitis; or it may be felt in the epigastrium. Respiration is rapid and jerky and expiration is accompanied by a grunt. Pulse is usually full at first, 110-140, but later it may become very rapid and feeble, or imperceptible and irregular.

Temperature is 102° in the morning and 104-5° in the afternoon.

At the crisis the temperature drops to normal or subnormal in 24 hours.

The remittent type is not uncommon in children.

The temperature may come down by lysis.

There may be a pseudocrisis, followed by a rise, which remains for two or three days, and the true crisis follows.

Nervous symptoms: At the onset these may be severe and the case appears like a meningitis (meningism). This condition may last two or three days and pneumonia may not even be suspected, necessitating a lumbar puncture to aid diagnosis. Then suddenly the nervous symptoms disappear and the physical signs in the lungs develop.

Convulsions at the onset frequently take the place of a chill, and are not of serious import, but if they occur at the end, the outlook is very poor, as it means either exhaustion, or meningitis. Convulsions are more frequent in children under 5 years of age.

The usual nervous symptoms are restlessness, sleeplessness, headache, sometimes delirium (low muttering, or wild and active).

Urine—High colored, sometimes containing a trace of albumen and a few hyaline casts.

Skin—The face is flushed, sometimes only one side. There is no cyanosis, except at the end, when there is failure of respiration. Herpes on the lip is frequent.

Physical signs: Percussion—Dullness, or flatness.

Auscultation—Diminished breathing, bronchovesicular breathing, bronchial breathing and voice. Sometimes the bronchial breathing is distant.

Palpation—Increased fremitus.

Over the normal lung areas the breathing is exaggerated.

Sometimes the physical signs cannot be detected until the 5th or 6th day. That is probably due to the

fact that the pneumonic spot is in front of the vertebral column, or the scapula. Look for it high up in the axilla, or over the apex in front.

Complications: Pleurisy (dry, or one or two ounces of fluid), empyema, meningitis (rare), pericarditis (rare), sometimes gastro-enteritis, peritonitis (with pleuropneumonia).

Course and termination: Pneumonia may end in death or recovery. Delayed resolution is rare. Tuberculosis and chronic pneumonia are rare. Empyema is common and frequently comes immediately after pneumonia, the temperature remaining high. The empyema may be encapsulated.

Death results from exhaustion with cardiac failure, with or without respiratory failure. Cardiac failure is accompanied by a rapid compressible pulse, pallor, weakness, but usually no cyanosis. Respiratory failure is accompanied by blue lips and finger tips, and sometimes a leaden hue of the whole body. There are usually tracheal râles and recession of all the soft parts of the chest on inspiration.

Death is most frequent at the crisis, but sometimes on the fourth day. Complications may cause death in two weeks, and sometimes longer.

Prognosis: Usually good, even when the temperature is very high. When complications are present, prognosis is not so good. If meningitis develops, the outlook is very bad. When the temperature persists after the tenth day, the case is unfavorable. For, though the crisis may be delayed until the tenth day, the temperature usually means that some complication has set in.

Treatment the same as that of bronchopneumonia. Stimulation is often unnecessary.

Pleuropneumonia: There is an exudate of pus and fibrin upon the pneumonic area. The symptoms of pleurisy are simultaneous with those of pneumonia. The case looks one of severe pneumonia. Friction sounds are more prominent in the beginning. We get moist crackling pleuritic râles. Breathing and voice may be diminished, or distant bronchial. Fremitus is diminished. There is marked dullness. Empyema is usually suspected; we may even get a few drops of pus from one of the pockets with an aspirating needle.

Prognosis is not good. Young children usually die during the second week and in severe cases on the fourth or fifth day.

Convalescence is slow and may be interrupted by a recurrence of the pleurisy. Adhesions cripple the lung for years, more so than in empyema.

Hypostatic pneumonia: This is frequent in children who die of marasmus. The only physical sign is moist râles posteriorly.

Chronic bronchopneumonia: (Interstitial pneumonia, Bronchiectasis). This disease is frequently tuberculous, but may be caused by a nontuberculous infection.

After an attack of bronchopneumonia the child does not seem to recover entirely, slight rise in the temperature continuing and physical signs persisting. Then the fever goes down and the appetite returns, but still the physical signs do not clear up. There is dullness, diminished, or bronchovesicular breathing. There is a dry cough and occasional pain in the chest. Dilated bronchi (as in adults) are seldom seen in young children. Several exacerbations of the bronchopneumonia may follow, each time leaving the lung more crippled. The second attack may not be as severe as the first, but it drags out for a few weeks with a slight rise in temperature. The child is usually very weak and may die from some intercurrent disease. With good care, recovery may be complete, or the child may remain delicate throughout life.

These cases are frequently diagnosticated as tuberculosis. Examine the sputum. Cases of non-tuberculous bronchiectasis are often characterized by clubbing of the fingers.

Gangrene of the lungs: This is a rare condition, but is more frequent in children than in adults.

The most frequent cause is bronchopneumonia. Other causes are tuberculosis, foreign body in the bronchus, embolism, which is the immediate cause of all cases.

Gangrene may be circumscribed, or diffuse.

The condition is usually fatal, but it is possible for older children to cough up the necrotic masses, and cavity to cicatrize.

There is a bad breath and coughing up of necrotic masses, with hemorrhage.

Death usually takes place before these symptoms have a chance to appear.

Treatment: Inhalation of creosote and turpentine.

Acquired atelectasis (collapse of the lung): Such a condition may be caused by pleuritic effusion, pericarditis, hypertrophied heart, mediastinal tumor, deformity of Pott's disease, or rickets.

The lungs may expand again, unless pleuritic adhesions form.

Atelectasis may also be caused by an obstruction of a bronchus, its extent depending on the size of the bronchus.

Bronchitis, or stenosis of a bronchus, is more likely to cause emphysema. In rachitic children, we may get a postero-inferior lobular pneumonia, with areas of atelectasis. The symptoms are inspiratory dyspnæa, with recession of the soft parts, rapid respiration and slight cyanosis. The physical signs are indefinite. We may get dullness, moist râles and diminished respiratory murmur.

Emphysema: There is a dilatation of the air vesicles. The percussion note is tympanitic.

- 1. Compensatory—Found in pneumonia, tuberculosis, pressure of Pott's disease or rickets.
- 2. Caused by stenosis of the larynx, bronchitis, or pertussis, where there is forcible expiration.

Pleurisy: Primary pleurisy is rare. It occurs most frequently after pneumonia, and next in frequency after tuberculosis. Empyema is common, but pleurisy is rare. In older children pleurisy may possibly be caused by exposure or rheumatism. It is more frequent in males between the ages of 1-5 years. It may occur in the course of infectious diseases.

Pleurisy with effusion: In primary cases the symptoms at the onset are like those of pneumonia, but milder. There is not much prostration. The temperature is remittent, 100-103°, pulse frequent and full, dyspnæa and pain in the chest are present. There are, indeed, some cases that seem exactly like pneumococ-

cus infection, only attacking the pleura instead of the lung, the onset and course being just as severe as that of lobar pneumonia. There are some cases in which the onset of the disease is very insidious.

Physical signs: Over the fluid—Flatness, breathing diminished, or absent, or bronchial (when the quantity of fluid is large and the lung is compressed), voice is diminished, absent, or bronchial; fremitus is diminished. Over the lung area—Exaggerated, bronchial, or cavernous breathing and bronchial voice, the signs depending on the amount of fluid present, causing lung compression. At the level of the fluid, we get ægophony (a peculiarly shrill bronchial voice).

Aspiration will show the presence of clear serum.

The serum, if not interfered with, will remain in the chest three weeks, or several weeks, or may turn into empyema.

Treatment: Rest in bed, sedatives, salicylates.

Do not aspirate unless the quantity of fluid is so great as to interfere with breathing and if it remains in the chest longer than three weeks. As soon as the temperature is normal, the patient should sit up. There should be no exertion, as deaths have been reported.

Empyema: The most frequent cause of empyema is pneumonia, which may be masked by the signs of fluid giving the empyema the appearance of a primary disease. Empyema following tuberculosis of the lungs is rare in children under five years of age. In children seven years of age or more, the disease is more frequent. It may complicate measles, scarlet, or any other infectious disease. It may be caused by

pyemia, from any cause such as infection of the umbilicus, suppuration of the joints, osteomyelitis, suppurative peritonitis. Local causes may be abscess of the chest wall, mediastinum, traumatic subphrenic abscess, necrosis of the ribs, perinephritic abscess, new growth of the lung, or actinomycosis. Bacteriologically we may find the pneumococcus alone, streptococcus and pneumococcus, streptococcus and staphylococcus (pyemia), or staphylococcus alone. In tuberculous empyema it is often difficult to demonstrate the tubercle bacillus. When no bacteria are found, suspect tuberculosis.

Symptoms: Physical signs are similar to those of pleurisy with effusion. In empyema following pneumonia, the disease is ushered in by a rise in the temperature, after the crisis. The temperature remains high and the child does not seem to improve in the normal way. The physical signs do not clear up and the condition is frequently mistaken for delayed resolution. A careful examination and the aspirating needle will determine the condition. If the child is seen for the first time, it often seems like a pneumonia, only the patient does not seem sick enough for the extensive physical signs.

Prognosis depends on the age of the patient, duration of the disease and the treatment. In babies under one year of age, there is mortality of 50%. In older children, with proper treatment, recovery is invariable. If treatment is not delayed, recovery is perfect without any deformity. Spontaneous recovery is rare, but possible. This may be either by absorption or rupture, externally, or into a bronchus. The pus may burrow in all directions, into the mediastinum, œsophagus,

peritoneal cavity, or may burrow down and appear as a psoas abscess.

Without treatment, the patients are worn out by suppuration, or die of amyloid degeneration, or tuberculosis.

Treatment: Surgical. Thoracotomy should be done as soon as the diagnosis is made. In infants, incision and drainage is sufficient. In older children, a section of one or two ribs may be removed to avoid compression of the drainage tube. The incision should be below the angle of the scapula. Cases of moderate severity heal in four to six weeks. Severe cases may last for weeks or months.

DISEASES OF THE HEART

Congenital anomalies of the heart: These are caused by imperfect development, feetal endocarditis, or a persistent feetal condition. The most frequent defect is a patent interventricular septum; next in frequency, a patent foramen ovale. These conditions are associated with a stenosis of the pulmonary artery or patent ductus arteriosus. Pulmonic insufficiency is rare and mitral and aortic lesions still more so.

Symptoms: Most cases show symptoms soon after birth. Some cases may show signs later during the first year of life. There are still other cases which do not give any symptoms till after puberty.

The most common and prominent symptom is cyanosis, which is most frequently associated with pulmonic stenosis. It is not always present, and is most prominent after exertion, crying and coughing. Sometimes there is dyspnæa and swelling of the lower extremities, fluid in the serous cavities, hæmoptysis, epistaxis, clubbing of the fingers. Physical examination usually shows an enlargement of the right side of the heart, with the presence of a loud systolic murmur heard all over the chest and loudest over the pulmonic valve.

The following variations in symptoms and corresponding conditions may be found:

Systolic murmur at the base with cyanosis—Pulmonic stenosis, usually associated with defective septa and patent ductus arteriosus.

Systolic murmur without cyanosis—Patent ventricular septum, or tricuspid insufficiency.

Systolic murmur at the apex with cyanosis—Patent auricular septum with patent ductus arteriosus, or transposition of great vessels.

Cyanosis without murmur—Atresia of the pulmonary artery and transposition of great vessels.

Diastolic murmur—Pulmonic insufficiency.

Absence of cyanosis and murmur—Atresia of the aorta, both vessels arising from the right ventricle, the interventricular septum remaining patent.

Diagnosis: Must be distinguished from acquired condition by the history, cyanosis character of the murmur and its location, the presence of clubbed fingers, and enlargement of the right heart.

Prognosis: Sixty per cent. die before 5 years; 16%

die after 16 years; 8% after 30 years.

Treatment: Symptomatic.

Pericarditis: Causes—Pleurisy, pleuropneumonia, rheumatism (after the age of four years), endocarditis, scarlet fever (usually associated with neuritis and joint affections), typhoid fever, tuberculosis (associated with tuberculosis of the lungs in children over two years), pyemia in the newborn, from the umbilicus, in older children from bone or joint infection, traumatism, foreign body in the œsophagus, rupture of a bone abscess or bronchial gland abscess.

There may be an inflammation of the external surface of the pericardium, which will give a friction sound

which increases with each systole. Posteriorly this inflammation (mediastinitis) will cause pressure on the large bloodvessels with cedema of the face or lower extremities, or ascites.

This condition may last three months to three years.

Only the internal inflammation is classed as pericarditis.

It may be fibrinous, serous, purulent, or hemorrhagic.

Symptoms: Pain in the precordium, palpitation and a rapid, irregular pulse. There is a double friction sound not dependent on respiration. When fluid collects the friction sound disappears and the apex becomes muffled and diffuse. Signs of fluid: Flatness, absence of breathing, murmur and fremitus. Frequently signs come on in the course of pleuropneumonia and are not noticed.

Duration is one to three weeks.

Dry pericarditis is followed by a chronic inflammation.

In the serous form, in which the fluid disappears, we get adhesions and friction sound.

The purulent variety is usually fatal, but if it opens spontaneously or is opened, recovery is possible.

Prognosis: Depends on the cause. If caused by pleurisy, or pleuropneumonia, prognosis is bad, as also in cases of pyemia. If rheumatic, which condition is frequently unrecognized, prognosis is better.

Treatment: Hot poultice, mustard plaster, or ice-bag.

Rapid heart action may be controlled by aconite, or opium.

If rheumatism, we use salicylates.

Serous effusions usually disappear under tonic treatment.

Sometimes too much pressure by fluid will cause syncope, cyanosis, irregular heart action, feeble pulse, dyspnæa, or orthopnæa.

In these cases, give oxygen; aspirate to relieve pressure.

If pus is found, open and drain. For aspiration we may choose one of three points: Fourth or fifth interspace, one inch to the left of the sternum; just at the right of the sternum; or just inside the line of dullness.

Chronic pericarditis with adhesions: The youngest case on record was sixteen months of age. It is frequently unrecognized. Sometimes it is of tuberculous origin. There is a thickening of the pericardium, which may be one-eighth to one-quarter of an inch in thickness. It will cause dilatation of the heart, sometimes with sudden death.

There is a characteristic drawing in of the chest with each systole, which may be better felt than seen, and which may also be seen in the subscapular region (Broadbent sign).

There is an area of dullness, with a forcible apex impulse.

The disease is often associated with endocarditis.

We may find that during diastole there is a collapse of the veins of the neck.

Acute simple endocarditis: In the fœtus it may affect the valves of the right heart. In infants it is extremely rare. Between the ages of three and five, it is not uncommon, but after that it is quite frequent.

Primary endocarditis is probably rheumatic fever, of which it is the first symptom. It is often associated with or preceded by tonsillitis, joint affection and chorea.

Infectious diseases, especially scarlet fever, influenza, may cause endocarditis.

Other causes may be pleurisy and pneumonia, of which it is sometimes a complication (pneumococcus, or staphylococcus infection).

Endocarditis is more frequent in children than in adults.

Symptoms: May be preceded by tonsillitis, or joint symptoms. It is usually ushered in by a temperature of 102°-105° F., rapid heart action, and dyspnæa. On the third or fourth day a murmur appears. The mitral valve is most frequently affected. The murmur is, therefore, systolic, heard over the apex and transmitted to the left.

The duration of the disease is one to three weeks. Febrile symptoms usually subside after a few days, and cardiac symptoms slowly diminish. The disease may terminate after a few weeks with death caused by an acute dilatation of the heart, or complicating pneumonia. Emboli, lodging in the spleen, may cause enlargement of that organ, lodging in the kidney may cause hæmaturia.

In some mild cases, the murmur may disappear after a few weeks. In the great majority of cases, the murmur persists. The attacks frequently recur and ultimately a chronic lesion develops.

Diagnosis: We must distinguish from pericarditis, or congenital anomaly, by the character of the murmur and the history of the case. Functional murmurs

are heard best over the pulmonic region, in the left second interspace, and are transmitted upward to the neck.

Prognosis: The danger to life is not great and depends on the severity of the case and the amount of dilatation of the heart.

Treatment: Rest in bed, opium, salicylates. Digitalis is rarely required. The patient should remain in bed at least four weeks and should have very little exertion for a few weeks after that.

Malignant endocarditis (septic): The disease is very rare in very young children, most cases occurring after the age of 10 years, and frequently in congenitally abnormal hearts. It is very rarely primary. It may follow pneumonia, rheumatism, meningitis. It is usually caused by a pneumococcus, streptococcus, or staphylococcus infection. In 75% of the cases the infection is grafted on an old valvular lesion. Streptococcus viridans is most frequently found.

Symptoms: There is a remittent fever, rigors, sweating, delirium, stupor and coma. There is also cough, sometimes pneumonia, and sometimes hæmaturia. Sometimes the symptoms may resemble those of meningitis, with hemiplegia (caused by embolism), and petechial spots. Spleen is usually enlarged, this being caused by repeated embolic process. The heart is characterized by a murmur. Death may be due to embolic process, or exhaustion.

Blood culture is positive.

Duration of the disease is a few days to a few weeks.

Prognosis is very bad; the outcome is almost invariably fatal.

Transfusion may be tried, as well as vaccines.

Chronic valvular disease: This is usually the result of acute endocarditis. The degenerative changes found in adults are not seen in children.

There seem to be more females than males affected. Most cases are traced to an attack of rheumatism. The disease is frequently associated with chorea. Occasionally the condition may be traced to influenza, scarlet fever, and rarely to other infectious diseases.

Symptoms: The onset is insidious. During the period of compensation there may be no symptoms except dyspnæa on exertion. The disease may be discovered by accident. It is usually progressive but may remain stationary for a long time.

Compensation may fail for the following reasons: Acute endocarditis, excessive muscular exertion, intercurrent disease (pneumonia, scarlet, typhoid), rapid growth at puberty.

We get increase in dyspnœa, cough with marked palpitation, pain in the chest, congestion of the lungs (subcrepitant râles), vertigo, fainting spells, headache, dropsy, fluid in the serous cavities, enlargement of the liver and spleen, scanty urine and albuminuria, clubbing of the fingers, cyanosis and dilatation of the superficial veins, epistaxis.

It is unusual to see all the symptoms of decompensation before the age of 10 years, but at puberty it is quite common.

Death may occur from sudden cardiac failure, or from intercurrent nephritis, pneumonia, embolism, infection of the serous membranes, or ædema of the lungs. The physical varieties are the same as in adults. Thus:

Mitral stenosis—enlargement of the right heart, presystolic thrill and murmur, small pulse.

Mitral insufficiency—Enlargement of the right and left heart, systolic murmur, transmitted to the left and back. The quality of the pulse depends upon the degree of compensation. This condition is frequently associated with mitral stenosis and we get a double murmur (presystolic and systolic). The second pulmonic sound is accentuated.

Aortic insufficiency—Enlargement of the left heart, diastolic murmur, transmitted downward, toward the apex, water hammer (Corrigan) pulse.

Aortic stenosis—Enlargement of the left heart, systolic murmur at the base, transmitted upwards, small pulse.

Dilatation of the left ventricle, with aortic lesion, will cause insufficiency of the mitral valve, although the valve may not be diseased. With loss of compensation in mitral disease, the right ventricle may become dilated and the tricuspid valve may become incompetent.

Prognosis: Very few children with valvular disease reach adult life in good condition. The demands on the heart at puberty are great. There is also danger from intercurrent diseases. The pericardial adhesions, which are frequent, are a handicap. The advantages over the adult are in the absence of disease

of coronary arteries, and the fact that the disease is more easily overcome by compensation.

In giving a prognosis, consider the progress of the disease, the child's condition, and the amount of dilatation.

Treatment: The child must be watched to note progress. We must make a careful examination at least four times a year. Watch for anæmia, and if it appears treat energetically. Direct exercise, such as walking, skating and horseback riding. No exercise that requires too much running should be allowed. The amount of exercise should be regulated according to the child's condition. We may use tonics, such as strychnine, cod liver oil and iron. If compensation fails, put the child to bed and give codeine and digitalis, if necessary. If dropsy develops, give salines and diuretics. If sudden heart failure should occur, give hypodermatically: Camphor and æther, caffeine sodium benzoate, digalen, strychnine and nitroglyc.

Myocarditis: It is of rare occurrence in children. Positive diagnosis is impossible. It has been known to occur even in the fœtus. Occurs after diphtheria, scarlet fever, influenza, or typhoid. Frequently there are no symptoms. Sudden death may occur even from so slight a cause as sitting up in bed. If symptoms are present, they are dyspnæa, pallor, syncope, irregular feeble heart action. Later, dropsy, fluid in serous cavities and dilatation may develop.

Treatment: Rest, no exertion after diphtheria, etc. Tonics, strychnine and cod liver oil. When there are symptoms of impending heart failure, morphine has a striking effect.

Anæmic murmurs: This is of quite frequent occurrence in children and often mistaken for valvular disease. The murmur is heard usually loudest over the pulmonic valve, at the base of the heart, and is also heard over the carotids. Sometimes it may be heard at the apex, but is not transmitted. The murmur may be of blowing character, or it may be musical. It may disappear with change of posture. There is no cardiac hypertrophy or accentuation of the second sound found in mitral diseases. The murmur disappears with improvement of the child's condition.

Functional disorders of the heart: This affection is very rare in infants and young children. In older children it is more common.

Causes: Indigestion, overpressure in school, puberty with rapid growth, masturbation, coffee, tea, cigarettes. It may follow typhoid, exanthemata, bronchitis or pneumonia.

Symptoms: The most prominent is palpitation, less frequent is bradycardia, or tachycardia. During the attacks of palpitation there may be dyspnœa, which may be quite severe, with a sense of oppression. The apex impulse may be felt over the entire heart area; the carotids pulsate forcibly; pulse is irregular in force and rhythm; the face is pale or flushed. There may be headache, vertigo, spots before the eyes, cold hands, cyanosis and general perspiration.

The attack may last a few minutes or a few hours.

Examine carefully before excluding organic dis-

In girls it frequently disappears when menstruation begins.

Treatment: During the attacks, we may give bro-

mides, or valerian, and sometimes it is necessary to give strychnine or camphor. Between the attacks when the pulse is irregular, we may give small doses of digitalis. It is most important to attend to the general condition. Exclude coffee, tea, tobacco, regulate out-door exercise and sleep, as well as hours for study. Regulate diet.

Small Arteries: Sometimes it may be only the aorta, but sometimes all the arteries are small (two-thirds or three-fourths normal size).

This condition may interfere with development and may cause hypertrophy of the heart.

Atheroma of the aorta and aneurism: Very rare in children, but cases have been reported.

Causes: Syphilis, tuberculosis, erosion of bone, abscess, embolism.

DISEASES OF THE GENITO-URINARY SYSTEM

Cyclic (orthostatic) albuminuria: This affection is of rather frequent occurrence in children between the ages of ten and sixteen years, associated with curvature of the spine. There is no albuminuria in the morning, but the afternoon urine shows the presence of albumin.

Treatment should be directed to orthopedic condition.

Hæmaturia: Causes—New growth of the kidney, calculus, nephritis (especially complicating scarlet fever), vesical calculus, local injury, infectious diseases, such as scarlet fever, malaria, typhoid, variola, influenza, also purpura.

Hæmoglobinuria: Causes—Winckel's disease, poisoning by carbolic acid, or potassium chlorate, typhoid, scarlet fever, malaria, syphilis, erysipelas. Paroxysmal hæmoglobinuria is rare in children.

Glycosuria: Found in some children who have a disturbance of digestion or are fed with excess of milk sugar.

Pyuria: Pus may come from any part of the genitourinary tract. It is most frequently traced to the kidney. There may be a rupture of an abscess (perinephritic or appendicial) into the tract.

If it comes from the kidney it is caused by pyelitis, pyelonephritis, tuberculosis, renal calculus. The urine

is acid and contains pus cells, albumen, transition cells.

If it comes from the bladder, there is not much pus mixed with the mucus, the urine is alkaline and there is marked vesical irritation.

Lithuria: The proportion between urea and uric acid varies. An increased secretion of uric acid means an increased destruction of the nuclein principle (white blood cells). The quantity of uric acid may be determined by means of Haycroft's test. If there is an excess of amorphous urates, uric acid is in excess, if the sp. gr. is not higher than 1.025. A brick-red deposit in the urine does not mean an excess of uric acid secretion.

Lithuria is present in anæmia, malnutrition, chorea, rheumatism and chronic dyspepsia.

Treat the cause.

Uric acid crystals forming a brick red deposit indicates decreased solvent power of urine, rarely found in children. It means gouty diathesis and is found in children with gouty antecedents. It is usually associated with digestive disturbances and frequently causes irritation of the urinary passages.

Treatment: Cut off nitrogenous diet; give sugar and starches and alkaline waters.

Indicanuria: Caused by putrefactive changes in the intestinal tract, also when there is suppuration without drainage, as in empyema and cavities in tuberculosis of the lungs. We find it in intestinal indigestion, obstinate constipation, putrefactive diarrhœa.

Acetonuria: Found in small quantities in healthy children. In larger quantities it may be found in febrile conditions, just before a coma in diabetes, starvation, cyclic vomiting, autointoxication. In autoin-

toxication there may be high temperature, drowsiness, and brain symptoms, with an excessive amount of acetone present in the urine. Starchy diet with bicarbonate of sodium given by mouth and by rectum usually clears up the condition of acidosis.

Anuria: No excretion from the kidney. In the newborn it may be due to malformation of the kidney, or uric acid infarction. This latter condition is shown later by the fact that when the urine does start, it is high colored and contains masses of uric acid crystals which may often be appreciated with the naked eye.

Sometimes anuria cannot be explained. It is not unusual for the newborn to go 10 to 36 hours without passing urine.

Treatment: Hot poultice over the kidney region. Also may give potassium citrate gr. i and Sp. ætheri nitrosi \mathbb{N}_1 in $\frac{1}{2}$ oz. of water every hour until the urine is passed and is normal in color.

Malformation of the kidney: Fusion of the kidney, cystic degeneration, single kidney, the other being rudimentary.

Hydronephrosis: This condition is frequently associated with cystic kidney and nephritis. If present on both sides, the infant dies during the first year. If it is unilateral, prognosis is better, but the affected side must be removed, as too much fluid collects and pyelitis is sure to develop. In infants it cannot be felt, but between the ages of three and ten years it is not difficult to palpate. It may cause a distention of the intestine. The bladder is frequently hypertrophied.

Uric acid infarction: Uric acid crystals and amorphous urates collect in the straight tubules. This is due to the presence of uric acid in the kidney before

there is enough water to dissolve it. It is of common occurrence in the newborn, and causes scanty urine or anuria for one or two days.

Sometimes may form a focus for a calculus in the kidney or bladder. Usually it is washed away by more freely running urine. It may cause pain and irritation upon micturition and leaves dark stains on the napkin.

Treatment: Hot poultice to the kidney, also potassium citrate gr. i and sweet spirits of nitre \mathfrak{M} I in water every hour until the urine flows freely.

Acute congestion of the kidney:

Causes: Ingestion of certain poisons, infectious diseases.

Symptoms: The urine is scanty and contains albumen, some hyaline casts, and some blood. It may cause headache and pain in the back. This congestion may pass off or may be the beginning of a nephritis.

Treatment: Hot poultices over the kidney, hot packs, or vapor baths. Also give saline cathartics.

Chronic congestion of the kidney is caused by heart disease, pleurisy, pressure by tumors on the vena cava. There is a trace of albumen and hyaline casts found in the urine.

Degeneration of the kidney (parenchymatous nephritis):

Causes: Introduction of certain poisons into the body (phosphorus, arsenic, mercury), infectious diseases (diphtheria, typhoid, etc.).

The amount of degeneration depends on the virulence of the poison. The cells are swollen, more opaque and granular. If the poison is very intense, nephritis develops, otherwise the cells gradually go back to normal.

Symptoms: Diminution or suppression of urine. The urine contains albumen casts and blood. If the degeneration continues, as in cases of severe poisoning, the patients pass into a comatose or typhoid state and soon die. In acute degeneration associated with infectious diseases, the only symptom present is albuminuria, which disappears as soon as the patient improves.

Acute degeneration of the kidney may be distinguished from other forms of kidney disease by the fact that it is evidently caused by the invasion into the circulation of some severe poison, and that it is not accompanied by dropsy, contraction of the arteries, or other of the renal symptoms.

Treatment: Treat the cause. When the urine is scanty we may give hot air baths, or hot packs. Of late years, in cases of acute poisoning by mercury, attempts have been made to save the patients by a surgical operation of incision and flushing the kidney.

Acute exudative nephritis: This is an acute inflammation of the kidney, characterized by congestion, degeneration of epithelium, exudation of serum and diapedesis of red blood corpuscles.

Causes: Scarlet fever, diphtheria, influenza. Some cases are apparently primary, following exposure. Nephritis may develop in the course of any severe infectious disease.

Symptoms: Some cases are so mild that they may be easily overlooked. There may be just a little malaise with headache and pains in the limbs. It may seem no different than an ordinary cold. The child

does not seem to respond to ordinary treatment and seems to look poorly. There may be a little rise in the temperature. These symptoms may last two weeks and be followed by recovery. The urine, if examined, will be found of normal sp. gr., and containing a moderate quantity of albumen with hyaline granular and epithelial casts, and sometimes pus and red blood cells. In some cases the amount of blood in the urine attracts the patient's or mother's attention. The urine gradually returns to normal state after a period of four or five weeks.

In cases of moderate severity the symptoms are as follows: Fever, some prostration, headache, stupor, sleeplessness, restlessness, muscular twitchings, general convulsions, dyspnæa, loss of appetite, nausea, vomiting, pulse of high tension, exaggerated heart action with hypertrophy of the left ventricle, dropsy and anæmia.

The urine: At first reduced in quantity, or suppressed; later the quantity increases, but still remains a little below normal. The specific gravity may be normal at the outset, but as the quantity of urine increases, it drops to a little below normal. The urine contains a large quantity of albumen as well as all kinds of casts, blood and pus cells. All these may be in proportion to the severity of the disease.

There are other cases, which are characterized by an excessive production of pus cells. These cases act like a severe infection, and may look like meningitis. There is sudden onset with high temperature, and marked prostration. Restlessness, headache, stupor and delirium are soon developed and continue throughout the attack. The patients rapidly pass into the

typhoid state. Dropsy may be slight, or absent altogether. The urine is not necessarily diminished in quantity, and the specific gravity is normal. The urine contains albumen, casts, many blood and pus cells. All these may not be present early in the disease.

The ordinary duration of an exudative nephritis is about four weeks, but some cases may last as long as eight weeks.

The recovery is usually complete. Chronic nephritis does not usually follow.

Prognosis is usually good in ordinary cases. Cases with persistent brain symptoms are very serious. Cases with excessive formation of pus are usually fatal

Treatment: Rest in bed, milk diet. Hot packs. Kemp's irrigation for 1/2-1 hour every three hours. This is a double current rectal irrigation with water at 104° F. When the nephritis is not too acute, digitalis may have a good effect on the circulation. Use digalen or digitalin, or digipuratum, or Tr. Digitalis. Also give saline cathartics such as magnesium sulphate, 1/2 drachm every hour until the bowels move, or until eight doses have been given. For suppression of urine, we should avoid the use of diuretics, which would only increase the congestion. Dropsy disappears with improvement. Hot packs, rectal irrigation and digitalis may be sufficient to obtain this result. We may have to resort to other drugs, particularly if the blood pressure goes above 180, which may be ascertained by the use of a sphygmomanometer; also in the presence of marked cerebral symptoms. These drugs may be:

Morphine 1/120-1/50 gr. of the sulphate q. 6 h. Nitroglycerin 1/300-1/50 gr. at regular intervals. Chloral hydrate 1-5 gr. q. 3 h.

Tr. Aconite 1-3 drops, or acontin 1/300-1/100 gr. Sodium nitrite $\frac{1}{2}$ -2 gr. t i d.

In bad cases, especially in full-blooded children, we may get relief by means of venesection, taking off 10 to 20 ounces of blood.

If vomiting is troublesome, we may give cerium oxalate and sodium bicarb. in the milk every 2 or 3 hours.

As the nephritis subsides the milk is gradually replaced by solid food.

During convalescence we may aid recovery by giving tonics.

Acute diffuse (productive) nephritis: This is an acute inflammation of the kidney with degeneration exudation and the formation of connective tissue in the stroma of the kidney. This nephritis is most commonly found late in scarlet fever.

Symptoms: Fever, prostration, headache, stupor, restlessness, sleeplessness, muscular twitchings and general convulsions, pulse high tension, heart action exaggerated and left ventricle may be hypertrophied, dyspnæa, loss of appetite, nausea and vomiting.

Urine: Scanty, or suppressed, containing much albumen, many casts, pus cells and blood cells.

Patients are usually sicker than in the exudative variety and are more likely to die.

Such a nephritis may run its course in four or five weeks and the patient may make an apparently complete recovery. He may remain well for weeks, months or years, but sooner or later he gets another attack of acute nephritis, or chronic nephritis may develop gradually.

The more ordinary cases have a gradual invasion and run a subacute course. In some cases at first there are only loss of appetite, headaches, and increasing pallor, dropsy developing very much later. In other cases dropsy of the legs seems to be the only symptom for a long time, the child feeling well otherwise.

In most of these subacute cases, headache, anæmia, dropsy of the face and legs, sleeplessness, nausea and vomiting develop at the same time. The urine is somewhat diminished in quantity, with normal or somewhat reduced sp. gr., containing a large amount of albumen and very many casts.

The course of these subacute cases varies. There are cases in which recovery follows after a few weeks, but the patients seem susceptible to fresh attacks, and sooner or later, perhaps after a few years, they develop chronic nephritis. There are other cases in which the recovery is apparently complete and the patients live in comparative comfort for years. The chronic nephritis is progressive, though very slow in development, after the acute attack, as evidenced by a gradual reduction of the specific gravity and the presence of a trace of albumen in the urine. If not taken off by some intercurrent disease they usually die of an acute exacerbation of the disease or in a condition of chronic uramia. In still other cases the patient gets an acute attack every few weeks or months, seeming apparently well between the attacks. Finally he gets an attack that proves fatal.

The worst cases are severe and continuous, with bad dropsy and uremic symptoms. Treatment in these

cases is of no avail; death is the usual outcome after weeks or months.

Prognosis: This depends on the severity of the case. Absolute and permanent recovery is rare but possible.

Treatment: Bed, milk diet, hot packs, Kemp's irrigations, digitalis. Also a daily dose of some saline cathartic (magnesium sulphate, or Husband's magnesia). During the subacute stage we may aid by the employment of diuretics. Thus: caffeine, strophanthus, diuretin, acetate of potash and squills.

In the presence of extreme dropsy, we may have to tap the serous cavities and puncture the skin of the legs, or drain by means of Southey's tubes. As the patient improves, diet should be gradually increased, but should be salt free.

During convalescence iron should be given.

When dropsy is very persistent, and resists all treatment, the patient may be improved by Edebohl's operation of decapsulation of the kidneys.

Tuberculosis of the kidney: We usually find miliary tubercles in cases where the tuberculosis is general. Large tuberculous deposits are rare in children.

Cases in which the tuberculosis is limited to the kidney have been reported. Other parts of the genitourinary tract may be affected. The bladder frequently escapes.

The symptoms are pain in the back, vesical irritation, and pus in the urine. Examine the urine for tubercle bacillus, also cystoscope and segregate the urine. If diagnosis is positive and only one kidney is affected, advise nephrectomy.

Malignant tumors of the kidney: This is most frequently sarcoma, but may be carcinoma.

It may form from the pelvis, cortex, or the adrenals. The growth is very rapid. In three months it may attain the size of a fist or may be so large as to fill the entire abdomen.

The symptoms are tumor, hæmaturia, cachexia.

The tumor must be distinguished from large spleen, retroperitoneal sarcoma, hydronephrosis, tumor of the liver, tumor of the abdominal wall, dermoid cyst of the ovary. When the tumor is large it may cause hydronephrosis by pressure on the ureter. It may also cause thrombosis of the vena cava and ædema of the legs. Pressure may also cause gastric or intestinal indigestion, or dyspnæa.

Secondary growths may be found in the liver or lungs, causing cough and hæmoptysis. Retroperitoneal glands are usually involved.

Treatment: Surgical, if seen early.

Death usually occurs in three to ten months.

Fibroma, fibrocystoma, and adenoma are benign tumors, which may sometimes be found.

Pyelitis: Causes: Infectious diseases, such as influenza, scarlet fever, diphtheria, malaria, typhoid, tuberculosis, pyemia, renal calculi. Sometimes pyelitis is apparently primary.

It is a frequent cause for obscure temperature, and it is best to examine the urine in every case in which fever cannot be otherwise accounted for. It may also be caused by a congenital malformation of the kidney and ureter, tumors of the kidney, and rupture of a perinephritic abscess into the pelvis of the kidney.

Symptoms: Chill, fever and pyuria. The fever is remittent and irregular. It may be high in the morning, go down in the middle of the day and go up again in the evening, or it may be normal in the morning, high in the afternoon and down again in the evening. The fever may be intermittent. There may or may not be pain in the back and bladder symptoms.

The chill may or may not be repeated.

The pus may form from 1 to 50% of the urine.

Urine: Acid reaction, containing pus cells and blood cells and albumen in proportion to the amount of nephritis present, or the amount of pus present.

Duration of the apparently primary cases and those following infectious diseases is from three to five weeks, or longer. Prognosis in these cases is good. In cases with calculus, or pyelonephrosis, the patients often die from exhaustion before any serious degree of nephritis develops.

Treatment: Rest in bed, milk diet, potassium citrate 12-24 gr. daily to an infant. If the urine is alkaline we may give urotropin or benzoic acid. Pyelonephrosis requires surgical treatment.

Renal calculus: Small calculi are common in infancy, but they do not usually give any symptoms. Large stones with symptoms, as in adults, are very rare.

Traumatic hydronephrosis: This condition may appear two weeks to two months after injury of the kidney. It may disappear spontaneously. Usually it is necessary to aspirate or open and drain.

Perinephritis: It may be primary or secondary to calculus, pyelitis, or tuberculosis of the kidney.

The primary variety is common in children and may be caused by injury or exposure. It may resolve or suppurate.

It occurs most frequently between the ages of three and six years. It may burrow between the lumbar muscles and appear in the ileocostal space. It may burrow between the abdominal muscles and appear above Poupart's ligament. Rarely it may work along the psoas muscle and appear on the inner aspect of the thigh.

It may open into the peritoneal cavity.

Symptoms are usually acute or subacute, rarely chronic.

There is a chill, followed by a rise in temperature (102°-104°), prostration, pain in the loin, sometimes in the groin or inner aspect of the thigh or even in the knee. There is a stiffness of the spine and tendency to flexion of the thigh on the body, with lameness. These symptoms may be present for two or three weeks before the swelling appears.

A fullness becomes apparent in the ileocostal space, which later becomes a distinct mass. Some cases will show a swelling on the inner aspect of the thigh. The inflammatory mass suppurates, and the sac contains three ounces to a pint of pus. Tenderness over the affected region increases as the disease progresses. There is a characteristic concavity of the spine toward the affected side, and the thigh is flexed at right angles.

Urinary symptoms may be entirely absent or there may be frequency of urination, pain referred to the bladder, pus in the urine (pyelitis).

The patient may pass into a typhoid state.

The usual duration is from three to eight weeks.

With resolution there is a subsidence of all the symptoms but the lameness, which may persist for several months.

Diagnosis: We must think of coxitis and Pott's disease.

Treatment: Rest in bed, icebag to the loin. When suppuration seems inevitable, use hot poultice and incise early.

General œdema, not dependent on renal disease: This condition may be secondary to marasmus, anæmia. There is sometimes serum in the cavities. The urine does not contain albumen.

It is possible for the child to recover, but death is the usual outcome.

Addison's disease: The disease is usually associated with a tuberculous inflammation of the adrenal glands.

The characteristic signs are: Bronze discoloration of the skin and later severe gastric symptoms, with gradually increasing asthenia.

Obstipation has been mentioned as a possible cause, and hopeful results have been obtained by the use of Russian mineral oil, given in generous daily doses. This treatment overcomes the stagnation of fœcal substance and the resultant autointoxication.

The duration of the disease is indefinite; it may be a few months or a few years. The outcome is fatal.

DISEASES OF THE GENITAL ORGANS

Malformations: Epispadias—absence of the superior wall of the urethral canal.

Hypospadias—absence of the inferior wall of the urethra.

The urethral opening may be at the junction of the penis and scrotum.

Extrophy of the bladder—absence of the anterior covering and bladder wall, with eversion of the vesical mucous membrane. Surgical interference must be resorted to.

Adherent prepuce occurs very frequently. Sometimes remains adherent a long time, causing the incarceration of smegma, and resulting in swelling with pain and irritation. Upon separation of the prepuce, the smegma is easily evacuated.

Phimosis: The prepuce is long and the opening is so small that it is impossible to draw it back over the glans penis.

It may not cause any symptoms. It may cause: balanitis, hernia, hydrocele, painful urination, incontinence, spasm of the vesical sphincter with retention, prolapse of the rectum. It may be the irritating cause in convulsions, epilepsy, hysteria, pseudoparalysis with spasm of the muscles about the hip (resembling hip disease), night terrors, priapism, masturbation.

Treatment: Stretching or circumcision.

Undescended testicle:, Testicle may be in the ab-

dominal cavity or in any part of the inguinal canal. It usually descends in the first week of life. It may be helped along by manipulation. Sometimes it may not descend until puberty, or may not descend at all.

If not in the canal it should be left alone. If in the canal an attempt may be made to pull it down and fasten it by means of a surgical procedure. If painful it should be removed.

Balanitis: Infection of the glans by smegma, injury or masturbation.

Treatment: Wet dressing. Sometimes it may be necessary to slit the prepuce. We should not do a circumcision until the inflammation subsides.

Meatitis erosiva puerorum: This is an erosion of the meatus, causing painful urination and even retention of urine. It is usually found in little boys with a very small urethral opening. The irritating cause is probably friction of a rough napkin.

Treatment: Cauterization with a silver nitrate stick. Sometimes it is necessary to slit the opening to allow an easier flow of urine.

Urethritis: Simple or gonorrhœal.

Simple vulvo-vaginitis catarrh: Caused by dirt infection. Wash with a weak permanganate solution and keep clean.

Gonorrheal vulvo-vaginitis: This is of frequent occurrence. The infection may be caused by attempted rape or it may come from the parents by the use of infected towels, etc. It is very commonly found in institutions and hospitals.

There are usually no constitutional symptoms. Locally we find redness and a thick yellow discharge. Microscopical examination discloses the gonococcus.

Treatment: During the very acute stage we may irrigate the vagina with a weak solution of potassium permanganate (1-4000).

Later, best results are obtained by the use of silver nitrate solutions. These are used in the following manner:

During the 1st week—1% sol. every day.

During the 2nd week—2% sol. every 2 days.

During the 3rd week—3% sol. every 3 days.

During the 4th week-4% sol. every 4 days.

After that a 5% sol. once a week.

Continue the last for a few weeks and then stop.

If the treatment is continued too long, we may induce simple catarrhal condition as a result of the treatment.

The technique is as follows:

Fill two I or 2 oz. syringes, one with sterile distilled water, and the other with the silver nitrate sol.

After washing the external parts, introduce a small catheter through the opening in the hymen, about $1\frac{1}{2}$ inches into the vagina.

Then attach the syringe containing the water and inject, at the same time holding the labia close together so as to balloon out the vagina, thus putting the mucous membrane on a stretch.

Withdraw all the water that may remain in the vagina and repeat the same procedure with the silver nitrate sol.

Another form of treatment is to make direct application to the mucous membrane with tr. iodine by means of an endoscope.

Gonococcus vaccine may be tried. It is given hypo-

dermatically. Give dose every 3 or 4 days. Start with 50 million, and gradually go up to a billion.

Herpes of the vulva: Usually disappears after a few days. It may be mistaken for mucous patches.

Gangrenous vulvitis (Noma): This is the same form of infection as cancrum oris. It occurs after some infectious diseases, particularly measles, when vitality is much reduced. It is usually fatal.

Recovery results in great deformity. May cause fistulæ, or atresia, or stenosis of the vagina.

Enuresis. Causes: Organic nervous diseases.

Inflammations of the genito-urinary tract: Urethritis, cystitis, pyelitis.

Calculus, renal, ureteral or vesical.

Tumors of the bladder or kidney.

Malformations: extrophy of the bladder, epispadias, hypospadias, phimosis, small meatus, adherent clitoris.

Constipation, fissure in ano, pinworms.

Masturbation. Diabetes mellitus. Diabetes insipidus.

Adenoids.

Scrotal hernia, undescended testicle.

Functional disturbance of vesical sphincter action.

Enuresis may be diurnal, nocturnal, or both.

It is frequently caused by improper early training. The involuntary act has never been properly changed into a voluntary one, so that enuresis may be placed in the category of habit twitch.

The affection usually continues up to the 6th or 7th year. Sometimes it may continue until puberty.

Prognosis is better at 4 years than at 8 years.

The children usually recover unless the condition is due to some organic disease.

There is never any dribbling of urine; the evacuation is sudden.

Treatment: Ascertain the cause and treat accordingly.

Begin to train babies early. It is best to start when the baby is 9 months old. The child should be placed on the commode at regular intervals, both in the day time and at night.

The evening meal should be light. Do not allow coffee or tea.

The child must be aroused once or twice during the night so as to forestall the accident.

The method of treatment that is most important is that of re-education. The child is urged to micturate in the presence of the parent or nurse and instructed to pass water in little jets, a small amount at a time, each time suddenly arresting the flow. As in the habit twitch (Tic. convulsif), the idea is to convert the involuntary act into a voluntary one.

Of drugs, not much may be expected. Bromides have been used. Atropine has yielded the best results. It should be given in slowly ascending doses.

Atropine Sulph. gr. ss to Water 3i
One drop is equivalent to 1/1000 gr.
Give Ili t. i. d. and increase gradually as follows:

1st day 1-1-1 2nd day 1-1-2 3rd day 1-2-2 4th day 2-2-2 etc. Continue up to 10 drops, t. i. d., then go down again. Vesical calculus: Usually originates in the kidney. It is most frequently of uric acid origin. It is rather rare in children and has often been overlooked.

Symptoms: Tenesmus, incontinence and pain, especially after urination. There may be a sudden stoppage of the flow during urination, which is a characteristic sign. Hæmaturia is rare, but we usually find pus and mucus in the urine.

Prolapse of the rectum and rectal tenesmus are common; so that in persistent prolapse of the rectum, suspect vesical calculus.

Sometimes it is possible to feel the stone by a rectal examination. A positive diagnosis is made by means of a sound introduced into the bladder or by means of a radiograph or cystoscope.

Treatment: If the stone is small we may remove the stone by crushing. If the stone is large we must remove through a suprapubic incision.

DISEASES OF THE THYMUS GLAND

Hyperplasia: This is very indefinite, owing to the wide range of size and weight (2-30 gm.). Clinically the thymus occupies the triangular space the base of which corresponds to a line drawn between the sterno-clavicular joints and the apex pointing downward and extending down to the level of the second rib.

If on percussion we find that there is no area of resonance between the thymus and the heart, we may consider the thymus gland enlarged.

When percussing have some one hold the child with the body inclined forward. The same dullness on percussion may be caused by the presence of large mediastinal glands.

A radiograph may show a shadow extending as far

Pressure of this gland on the trachea will cause thymic asthma, which disappears as the child grows older and trachea becomes firmer.

The hyperplastic thymus gland is not appreciable on percussion after the 6th year of life.

Status lymphaticus: Characteristics: Large lymph glands, and lymph nodes, large spleen, large thymus, anæmia, weakness of the muscles, weak heart muscle with dilatation, sudden death.

The child is usually small, fat and pale. It may frequently succumb to a slight intercurrent disease, even eczema.

The child may have rickets, spasmophilia or tuber-culosis (scrofula).

Other affections of the thymus are rare. These may be syphilis, tuberculosis, acute inflammation or new growth.

DISEASES OF THE THYROID GLAND

Abscess of the thyroid: Acute inflammation, requiring the usual surgical treatment. Prognosis is good.

Goitre: There is a partial hyperplasia, with circumscribed tumors, infiltrating the gland. It is more frequent during the first year than the second, and then it increases in frequency up to the 15th year.

It is more frequent in females. Sporadic cases are rare.

Endemic cases are usually associated with cretinism, cases in which the whole thyroid is involved in the goitre.

Where the whole thyroid is not involved, the function will not be interfered with.

Drinking water is probably an important factor in the etiology of endemic cases.

Symptoms depend on the size of the tumor and the amount of pressure on the trachea.

The patients usually have a short fat neck and may suffer from dyspnœa, cough and inspiratory whistle.

In sporadic cases look for heredity.

Treatment: Thyroid ext. and potassium iodide.

Congenital goitre: In these cases heredity is an important factor. It is usually associated with a large thymus.

The goitre gradually decreases in size and rarely

becomes permanent. It may cause sudden death by pressure on the large vessels in the neck and trachea, with secondary bronchopneumonia.

The treatment is the same as above. We may give thyroid extract to the mother.

Cretinism: This is a disease due to the absence of thyroid secretion. The characteristics do not show at birth, but at the age of I year. Heredity plays an important rôle. There is a degeneration of the thyroid gland with hyperplasia. The thyroid gland may be replaced by a small fat cushion. Eighty per cent. of the cases also have goitre.

The body is short, stumpy and fat. The extremities are short, the skull is flat and broad, lips are thick. The tongue is large, the nose is broad and saddle-shaped, the skin is dry; hair is dry and bristly; the hands are spade-like, with short, stumpy fingers. The intellectual development is slow and may vary from defective to idiocy. The voice is hoarse. Hair on the genitals is slow in appearance.

The abdomen has a tendency to be balloon shaped and umbilical hernia is common.

Treatment: Thyroid extract in gradually increasing daily doses.

We may begin with ¼ gr. a day and increase the dose every week or every month, depending on the results obtained. The maximum dose necessary is usually 5 gr. daily.

With the administration of the thyroid extract, the patient improves rapidly.

The mental and physical development become more nearly normal.

There are various degrees of improvement. The

most favorable cases differ very slightly from the normal child.

These patients must take their thyroid for the rest of their lives, otherwise symptoms of myxædema will develop.

Myxœdema: The same as in the adult. The condition is due to deficient function of the thyroid. The symptoms are similar to those of cretinism.

Infantile myxidiocy: This is a congenital affection. The thyroid may be absent or intact (with arrested function).

There is marked myxœdema, with arrested mental and physical development. The condition is somewhat improved by thyroid therapy.

Congenital myxidiocy: The myxœdema is apparent in the first months of infancy.

Acquired myxidiocy: Appears later in infancy.

Infantilism: This is a continuance of the infantile state of the mind and body, with an undeveloped state of the genitals.

It may be a mild form of myxidiocy.

There are two types:

- I. Myxœdema type—with short extremities, and fat appearance (Brissaud type).
- 2. Thin long face with thin long extremities (Lorraine type).

Thyroid extract may sometimes improve the first type.

Basedow's disease (Graves' disease): This condition is rare in children. The cardinal symptoms are the same as in adults: large thyroid, exophthalmos, tachycardia, tremor and anæmia. The first two are often absent.

Mongolism: Mongolism is recognized at birth by the characteristic facies.

There is a downward sloping of the inner canthus of the eyes.

It seems to be an arrested form of fœtal development.

Mental development is very slow. The babies are small and delicate, but show no dwarfism.

Other characteristic signs are: Tongue sucking, loose joints, long tapering fingers, chicken breast (due to associated rickets), tendency to herniæ, blepharitis, bronchitis and pneumonia.

Ossification is not delayed as in the cretin.

The children usually die in infancy with pneumonia or some other intercurrent disease.

If they grow up to adult age, they do not show any dwarfism, but a slow and imperfect mental development. Speech is imperfect and the voice is harsh.

Treatment is of no avail. Thyroid extract is usually given.

Micromelia (Achondroplasia, chondrodystrophy): Characteristic signs: long body, short extremities, saddleshaped nose, normal intelligence.

It is due to a non-development of cartilage in the long bones.

DISEASES OF THE BLOOD AND BLOOD-PREPARING ORGANS

Symptomatic or secondary anæmia: Causes: Hemorrhage, illness, malnutrition, improper hygienic environment. In this group we may also mention anæmia of school children, which is caused by overheating and improper ventilation of school rooms, together with insufficient out-of-door exercise and improper diet.

These anæmias improve upon removal of the cause. School children should be removed from school for a few weeks and given plenty of fresh air and outdoor exercise. Food should be simple and given at regular intervals. Eating of candy, etc., between meals is a very important factor in the causation of loss of appetite, indigestion, with secondary malnutrition and anæmia.

Treatment: Regulation of diet and exercise are most important.

Tonics may be used as an aid. Thus we may give: Maltine and iron, Liq. Ferri Peptomangan or the Syr. of iodide of iron.

Anæmia pseudoleukæmia infantum (Von Jaksch): From the seventh month to the second year we often see severe anæmias with grave blood pictures.

Among the chief causes for this condition we may mention: Poor heredity, poor environment, bad artificial feeding, gastroenteritis, rickets, etc. In mild cases we find continued pallor and weakness.

In severe cases the pallor assumes a yellowish tint. The child is irritable and cries continuously, especially upon attempts to move it (probably on account of rickets).

Diarrhœa is often present and bronchopneumonia frequently develops.

There may be hemorrhage from the skin or the mucous membranes.

The retina is not affected.

The spleen may be slightly enlarged, or very much enlarged and hard.

The glands in the axilla, neck, as well as the epitrochlear and inguinal glands may be somewhat enlarged.

The liver is usually normal in size but may extend two fingers' breadth below the free border of the ribs, and is soft. This, probably, is due to associated rickety condition.

The blood condition varies with the severity of the case. The characteristic points are: Red blood cells—reduced in number, with a reduced quantity of hæmoglobin. We usually find poikilocytes (irregular shaped and pointed erythrocytes), normoblasts, and in severe cases megaloblasts. The cells may vary in size from very small to very large. Lymphocytes are numerous (50%), polynuclears—30%, myelocytes and mast cells are also usually found.

The total white blood cell count varies from 10,000 to 50,000.

The diagnostic points of the disease are large spleen, normal liver, large number of normoblasts (nu-

cleated red blood cells) and lymphocytes: It must be differentiated from leukæmia, pernicious anæmia and rickets with simple anæmia.

Treatment: Give breast milk, if obtainable, or careful artificial feeding. Stop pasteurizing or boiling the milk. In older children give a mixed diet, consisting of meat juice, cereals, spinach, potato, asparagus tips, carrots and raw fruit juice.

Medication: Fowler's solution, or oil of phosphorus (1%) ½-2 drops, t. i. d. in emulsion of cod liver oil. We may also try bone marrow stirred up in egg and spread on bread.

Transfusion will be beneficial; 60-200 c.c. may be transfused. This is facilitated by the use of Sodium citrate. This added to the blood drawn from the donor (I gr. to the ounce) will retard coagulation three or four days (Lewisohn).

Chlorosis: Chlorosis develops during the second decade in female children. The probable causes are constipation, intestinal intoxication, insufficient outdoor exercise, too much study, poor nourishment, and possibly internal secretions of the internal sexual organs (Van Noorden).

The blood shows a reduction of the number of red blood cells to a slight degree, but the reduction of hæmoglobin is very great, and shows under the microscope by the pale appearance of the corpuscles, these being colorless in the centre.

Symptoms: Pallor, weakness, vertigo, attacks of syncope, dyspnœa, headaches, amenorrhœa, indigestion, and sometimes symptoms of gastric ulcer, epistaxis.

Treatment: Fresh air, change in environment, if

possible; rest and simple good food. Iron is very valuable in these cases.

The following preparations may be used:

Maltine and iron or Neoferrum, Dose 3i Liq. Ferri Peptomangan, Dose 3i Syr. Ferri Iododi, Dose ¶v-xx Ferri Sulph. exsic., Dose gr. ss-iii Iron Tropon, Dose gr. v We may also give arsenic.

Pernicious Anæmia: This affection is rare in children. There seems to be a consensus of opinion that pernicious anæmia is a severe form of secondary anæmia.

Causes: Chronic poisoning (carbon monoxide or coal gas), tumors, tumors of the bone marrow, infectious diseases (sepsis, syphilis, malaria), bodily or mental injury, autointoxication, worms (ankylostoma duodenale, Bothriocephalus latus, Ascaris lumbricoides).

There is a destruction of the blood, and affection of the bone marrow. There is gastric pain and anorexia. Retinal hemorrhages appear early. We also get hemorrhages from the intestines and sometimes from the kidneys. The spleen is enlarged. Other signs: Pulsating carotids, diastolic murmur, venous hum, rapid pulse and respiration. The temperature is normal or slightly raised. There is a disturbance of digestion and increasing weakness, which in bad cases is followed by coma and death.

Blood: Number of blood cells is very much reduced; hæmoglobin is also reduced, but the blood cells retain their normal color and may even be of a deeper

shade than normal. We also find poikilocytes, microcytes, normoblasts, megaloblasts. The white blood cells are reduced in number, the lymphocytes predominating (60%).

Prognosis is bad unless the cause can be removed. Treatment: Treat cause and give arsenic. Early splenectomy has given good results; especially if preceded and followed by transfusion.

Leukæmia: There are two forms, lymphatic and myelogenous.

The lymphatic form is usually acute, but may be chronic.

The myelogenous form is usually chronic, but may be acute.

No uniform cause has yet been recognized. Any disease that is a drain on the system may be a predisposing cause.

It is possible that it may be of infectious origin owing to the enlargement of the glands.

Symptoms: Acute or chronic.

It begins with pains in the limbs, with weakness and anorexia, and sometimes pains in the region of the spleen.

There may be a slight rise in the temperature.

There is increasing pallor and dropsical manifestations, septic involvement of the tonsils, stomatitis. Hypostatic pneumonia usually precedes death. Glands all over the body are enlarged (about the size of a hazel nut). The spleen is enlarged. We get hemorrhages into the skin and from mucous membranes. Retinal hemorrhages appear early and are seldom absent. The liver is enlarged (usually studded with white specks of lymphoid cells).

Blood: Lymphatic form—A large number of large and small lymphocytes (100,000-500,000). The ratio as compared with the red blood cells is 1-20 to 1-1.

In the myelogenous form, we find a great many myelocytes (neutrophile and eosinophile large mononuclears), also mast cells (basophile polynuclears), atypical forms of polynuclears, small or large, with very little or no granulation (karyokinesis).

Red blood cells—two to three million, with microcytes (small), megalocytes (large), poikilocytes (irregular in shape), normoblasts (nucleated).

Course: From three weeks to four years.

Treatment: 'Iron, arsenic, iodine, radiotherapy, Benzol (Gtt i-x, in ascending drop doses).

Transfusion seems beneficial.

Pseudoleukæmia (Hodgkin's disease): This disease is usually found in young people, but children may be affected. The lymphatic glands are very much enlarged. The cervical glands are most frequently involved. These glands are often found to be tuberculous. The disease is probably akin to leukæmia, only the marrow of bones and spleen are not involved.

Symptoms: There is a marked enlargement of the lymphatic glands, especially the cervical glands. These grow to good sized tumors, exerting pressure on the trachea and œsophagus, causing difficulty in swallowing and respiration. Glands in the other parts of the body, including the internal organs, gradually become affected. The spleen is large, sometimes attaining enormous proportions. The liver is also large.

We may also have fever, anæmia, cachexia, amyloid degeneration, septic infection and pneumonia.

Blood: Diminution of the number of red blood

cells and hæmoglobin; no grave change; white blood cells are slightly increased in number; lymphocytes are somewhat increased in number. When tuberculosis is present the polynuclears are increased in number.

Prognosis is uncertain. The disease usually drags on for years, with periods of improvement. An attack of measles or varicella has been known to effect a transitory improvement.

Treatment: The same as in leukæmia. Enlargement of the spleen: Causes:

Infectious diseases (typhoid, malaria).

Leukæmia, pseudoleukæmia, Von Jaksch anæmia. Echinococcosis of the spleen.

Splenoptosis, frequently associated with enteroptosis.

Rachitis (the enlargement is probably due to secondary anæmia, and pressure downward by contraction of the chest, Harrison's groove).

Syphilis.

Hanot's cirrhosis of the liver.

Banti's disease: Begins with enlargement of the spleen, followed by secondary anæmia (with lymphocytosis, splenic anæmia). After a number of years cirrhosis of the liver develops, causing ascites, etc.; also leucopenia.

Extirpation of the spleen is sometimes curative.

Gaucher's splenomegaly: This form seems to be a familial type of splenomegaly. The spleen usually grows to enormous size. There are no special blood changes. The patient seems to be in good health until

the spleen gives pressure symptoms. The disease begins before 13 years and lasts about 25 years.

Splenectomy should be advised if spleen becomes too large. Death from intercurrent disease may occur.

Hæmolytic jaundice: Familial; liver and spleen enlarged (spleen first); gradually increasing jaundice; sometimes hemorrhages from mucous membranes. Urine contains urobilin, but no bile. Early splenectomy gives good results. There may be attacks of liver pain and tenderness. Differs from Hanot's cirrhosis: Spleen large first; fragility of red blood cells.

HEMORRHAGIC AFFECTIONS

The following conditions are associated with hemorrhage:

Infectious diseases

Syphilis

Sepsis

Blood diseases (leukæmia, anæmia)

Hæmophilia

Purpura (simplex, rheumatica, hemorrhagica, fulminans)

Scurvy

Melæna neonatorum

Paroxysmal hæmoglobinuria

Weil's disease

Cirrhosis of the liver.

Hæmophilia: A hereditary affection. It is more common in boys. Girls may not be affected and still carry affection to their children.

A male hæmophilic may with a healthy woman have a normal child.

Hæmophilic women produce children that are affected.

Symptoms: There is bleeding from the skin and mucous membranes upon the slightest provocation. We may also get hemorrhages, which are subcutaneous, interstitial, intramuscular or into the joints. These are of varying severity. The hemorrhages may

form large hæmatomata which upon absorption cause scar formation, with stiffening of the joints and muscles.

A large number of hæmophilics succumb to internal or external hemorrhages in early childhood.

Purpura: All forms seem to be associated, the difference being in severity. There is tendency to hemorrhage, which may be subcutaneous, into the joints or organs or from mucous membranes. Thus a great variety of pictures are presented.

The cause may be infection, or toxemia, which effects a change in the walls of blood vessels. There is no change in the coagulability of the blood itself, but a change in blood platelets may be at the basis of the disease.

Purpura simplex: At the onset we usually get headache, lassitude and vomiting. This is followed by small subcutaneous hemorrhages, resulting in the formation of petechiæ and wheals, which do not disappear on pressure. Sometimes it is associated with true urticaria and exudative eczema.

It may come out all at once and disappear in twelve days, or it may come out in successive crops, lasting for months.

The spots appear on the extensor surfaces of the arms and legs and on the trunk. The face and hands remain free.

Prognosis is good.

Purpura rheumatica (Peliosis rheumatica, Schoenlein's Disease): This disease may run an acute course in fourteen days or more frequently it takes a paroxysmal course.

The symptoms are similar to the simple form, but are more severe.

There are pains in the joints, owing to serious infiltration of the periarticular tissues or hemorrhages into the joints.

The disease sets in with fever anorexia, vomiting and diarrhoea.

The purpuric eruption may be associated with erythema nodosum, erythema multiforme, urticaria and exudative eczema.

The outcome is favorable.

Purpura hemorrhagica (Morbus maculosus Werlhofii): Subcutaneous hemorrhages are like those of simple purpura, but more extensive. There are also hemorrhages from the mucous membranes of the nose, stomach, from the kidneys, etc.

It occurs in patients who are apparently healthy and usually runs an acute course. At the start there is a little rise in the temperature, with weakness and subcutaneous hemorrhages. Joints are not affected.

Subcutaneous hemorrhages may be very large.

Prognosis is good. Death may occur as a result of too much loss of blood.

Abdominal purpura (Henoch's): This form begins like purpura rheumatica. This is followed by colic and intestinal hemorrhage, vomiting of blood and diarrhea with black stools. The abdomen is distended and sensitive. These symptoms appear in paroxysmal attacks at intervals of days, months or even a year. The attacks diminish gradually in severity. Prognosis is doubtful, on account of possible affection of the kidney.

Purpura fulminans: This is like purpura simplex,

but is characterized by very severe subcutaneous hemorrhages.

It takes a very rapid and fatal course in 12 hours to four days.

Paroxysmal hæmoglobinuria: Predisposing causes: hereditary syphilis, malaria, scarlet fever.

The immediate cause is exposure to cold.

Each paroxysm lasts 1½-2 hours. It comes on at varying intervals following exposure.

Symptoms: There is lassitude, yawning, chill, cyanosis, followed by heat and perspiration, associated with hæmoglobinuria.

The skin may show hyperæmic spots, or wheals, which may become gangrenous. The urine is dark red or brown. Microscopically, the urine shows masses of pigment but no red blood cells.

It must be differentiated from hæmoglobinuria occuring after burns or poisoning with phosphorus, mushrooms, potassium chlorate, phenol, etc.

Treatment: Hæmophilia —Prohibit marriage of hæmophilics, especially in the cases of women coming from hæmophilic families, even if they themselves are not bleeders. For bleeding we may use the subcutaneous injection of 10% solution of Russian gelatin, the quantity employed being 20-30 cc. Elevate the bleeding part.

The coagulability of the blood may also be increased by transfusion or the injection of human serum or horse serum. Before using any serum or blood, always ascertain as to hæmolysis and anaphylaxis. We may try intramuscular injection of whole blood 6 cc.

Purpura: Rest in bed, 10% sol. of gelatin by hypodermoclysis (20-30 cc.) and 200 cc. daily by mouth.

Henoch's purpura: Rest in bed, icebag to the abdomen, cold bland diet, gelatin. No coffee, tea or alcohol.

For local bleeding we may use adrenalin solution, sol. of ferric chl. coagulen, pressure and elevation.

Hæmoglobinuria: Rest in bed and warmth. A bland diet, plenty of water. Treat the cause if found.

DIABETES

Diabetes mellitus: This is more frequent in children than was formerly believed.

Two and one-half per cent. of the cases occur during the first decade.

Young children also show more tendency to transitory glycosuria than adults. Diabetes is a metabolic disease. Heredity and consanguinity may be etiological factors. Concussion of the brain may be a cause. The disease is common among the Jewish race (consanguinity).

Usually, several members of the family are affected. The pancreas appears to be normal.

Symptoms: The most important symptom is glycosuria.

At first it may be slight, disappearing upon reduction of carbohydrates in the diet. The glycosuria may, however, at any time become so bad that even a carbohydrate free diet will not affect it.

When glycosuria is due to some slight change in the pancreas, it is generally transitory, disappearing after a few weeks.

There are patients who have a limited tolerance of carbohydrates which persists throughout life.

The majority of cases gradually become worse.

As soon as diet has no effect on the glycosuria, the children become more and more emaciated, languid and weak.

Diabetic acidosis, sooner or later, develops, generally followed by coma. Sometimes we find that even in bad cases the percentage of sugar in urine is unusually low. This may be due to the fact that all the sugar is not excreted. An examination of the blood will disclose a state of hyperglycemia (normal percentage of sugar in the blood is .06%).

Acidosis really means a reduction of the normal akalinity of the blood. The normal sodium bicarbonate content of the blood should be .36%. If that is reduced to .20% it means acidosis.

Acidosis is, generally, recognized by the presence of acetone breath and acetone, diacetic and oxy-buty-ric acid in the urine.

Sometimes, owing to defective excretion, examination of the urine may mislead us as to the actual acidosis of the blood.

Carbonic acid, present in alveolar air, is in proportion to the amount of sodium bicarbonate in the blood. Thus acidosis of the blood may be determined by means of an apparatus (Van Slyke), which indicates the quantity of carbonic acid in alveolar air and variation from normal.

Nitrogen ratio is, normally, 2.8 to each gramme of sugar. Increased nitrogen means hyperglycæmia.

Prognosis in diabetes of children is bad.

Treatment: The most important part of the treatment is the diet.

The regulation of the diet depends entirely on the

effect produced. It is best to begin with a strictly carbohydrate free diet, until the urine is free from sugar. Then gradually add carbohydrates to ascertain the patient's tolerance. The greater the tolerance the more favorable the case.

In bad cases it is necessary to adhere to a strict diet for a long time. Watch for acidosis, and if present, add 30 to 60 gm. of carbohydrate daily for a few days.

Physical exercise increases carbohydrate tolerance.

Every once in a while it may be advisable to give the patient a day when his diet consists of eggs and vegetables; also a starvation day, when he is allowed only tea and a little vegetable. During starvation keep child in bed. In some cases diet has no effect on the glycosuria. Acidosis is also frequently present in these cases, and development of diabetic coma is imminent.

These cases are best managed by instituting starvation with rest in bed for a few days until glycosuria disappears. It is important in these cases to examine alveolar air repeatedly in order to keep posted as to the alkalinity of the blood. Acidosis may decrease in the course of this treatment or it may increase. If the acidosis increases we have to postpone starvation for a few days, putting the patient on a protein-fat diet. As soon as acidosis is markedly diminished, we may again try starvation, carefully watching the patient's condition. As soon as glycosuria disappears, give the patient a protein-fat diet, with gradually increasing quantity of carbohydrate.

At the same time it is important to have the patient take a good deal of physical exercise.

This treatment has been found remarkably suc-

cessful in some cases. If acidosis develops while the patient is on a protein-fat diet, add carbohydrate; also give 15-90 gr. of sodium bicarbonate daily. In the presence of diabetic coma, give infusion of a 3% solution of sodium bicarbonate, intravenously, and by rectum.

Diabetes insipidus: As in true diabetes a large amount of urine is passed. The urine is light colored and of a low specific gravity. The urine does not contain either sugar or albumen.

The condition is often associated with affection of the brain, and may frequently follow some infectious disease.

Sometimes no definite cause can be found.

The child may pass three to eight quarts of urine in 24 hours.

There is great thirst, perspiration is reduced and there may be trophic disturbances of the skin and nails.

In bad cases there may be considerable exhaustion, sometimes even causing death.

The child may get well or the condition may continue throughout life.

Treatment: Reduce fluids and try a salt free diet. Drugs have not given satisfactory results. We may use belladonna, strychnine, ergotin, antipyrin, salicylates.

SCROFULA

This is a disease of childhood and puberty, characterized by low resistance to infection and tendency to development of tuberculous adenitis, tubercu-

lous otitis, eczema, tuberculides (skin tuberculosis).

There is usually a persistent discharge from the nose, causing an excoriation of the upper lip. The eyes are frequently affected with blepharitis, phlyctenular conjunctivitis, or keratitis with photophobia

Otitis media with persistent discharge is common.

Adenoids are always present.

Cervical adenitis frequently becomes very large, resulting in rupture and fistulæ. Sometimes we get a mixed infection and acute suppuration.

Tuberculous ostitis in any part of the body may develop. Dactylitis is commonly encountered. There may be spondylitis, coxitis, tuberculosis of the knee, elbow, etc.

Treatment: Fresh air, good food, maltine and cod liver oil.

For glands—local application of 10% potassium iodide in lanolin base.

Do not incise unless there is suppuration.

For eczema we may use some tar preparation. The excoriations may be touched with 5-10% silver nitrate.

Adenoids should be removed.

Eyes—Hydrarg. Iodidi flav. gr. 2 in 2 drachms petrolatum, applied to the eyelids. For phlyctenular conjunctivitis, immerse the child's head in cold water every morning. If keratitis dilate the pupil with atropine.

Otitis-usual treatment and cleanliness.

Bone tuberculosis: Immobilization, Bier treatment.

COMMUNICABLE OR INFECTIOUS DISEASES

Measles (Rubeola): An intensely contagious disease. The contagion is probably carried by discharges from the nose, throat and eyes.

Children are more susceptible than adults to the infection.

Period of incubation, 10-14 days.

Invasion: There is fever, sneezing, cough. This usually lasts 3-4 days, but may last 12 hours to 6 days. Koplik spots appear during this period. These consist of red spots on the buccal or labial mucous membrane, $\frac{1}{8}$ - $\frac{1}{4}$ inch in diameter, with a central grayish spot.

The symptoms during invasion may sometimes be very severe. There may be chill, convulsions, headache and vomiting.

Eruption then appears on the face, neck, trunk, extremities and mucous membranes. The eruption is maculo-papular, with a tendency to crescentic formation. The patches are light or dark red and are scattered or confluent. Sometimes it may be hemorrhagic or vesicular. It reaches its full development in two to four days. After one week we see a fine desquamation. The temperature rises with the appearance of the eruption until it is complete and then it drops. With the high temperature we also get restlessness, sleeplessness, stupor and delirium.

The mucous membranes are inflamed. Thus, there is conjunctivitis with pain and photophobia, pharyngitis, bronchitis, laryngitis, gastritis and enteritis.

The eruption and fever subside in two to seven days. Convalescence is established in ten to fourteen days after the appearance of the eruption. Possible complications: Bronchopneumonia, otitis media, adenitis (simple or tuberculous), nephritis, cancrum oris or vulvæ.

The course of the disease may be mild, severe or malignant. The malignant cases are called black measles. The eruption in these cases is not well developed, but is very dark in color or hemorrhagic. Prostration is extreme, heart action very feeble, skin cold, tongue dry and brown. There are also marked cerebral symptoms, and hemorrhages from the mucous membranes. Convalescence may be delayed by a persistence of conjunctivitis, pharyngitis, otitis media, bronchopneumonia, gastritis, tuberculous adenitis, cervical or mediastinal. The child may remain anæmic for a long time.

Prognosis is usually good.

Treatment is symptomatic. The temperature of the sick-room does not have to be too warm. The room should be darkened. For a child 2 years of age we may give 1 or 2% Sol. of Carbolic acid, a teaspoonful every 2 hours.

Scarlet fever: A contagious disease characterized by sore throat and a scarlet eruption. The discharges from the throat and nose seem to be the source of infection.

Incubation—Seven days. No symptoms are present. Invasion—12-48 hours. There is fever with chills, vomiting, sore throat, headache, prostration and sometimes convulsions, delirium and stupor. The symp-

toms vary in intensity. They may be very severe or very mild.

Tongue—There is swelling of the papillæ (straw-berry tongue). This may not be apparent till the disease is well developed.

Throat—Angry red appearance; usually tonsillitis present; sometimes streptococcus diphtheria, rarely diphtheria.

The eruption appears with the temperature rising. It appears in the form of minute red points. These become very numerous and confluent. The eruption appears first on the neck and shoulders and extends down the trunk and extremities. It reaches its full development in from one to four days, when the skin is uniformly red and swollen, and tense.

The regular cases are easily recognized, but atypical cases are frequently a source of doubt. Thus the eruption may appear in one part of the body and never extend. The eruption may be only a few hours in duration and may never be seen.

The duration of the regular eruption is 3-10 days. As the eruption disappears desquamation begins, and may last three to eight weeks. Desquamation may be delayed until the end of third week.

Cases where no eruption was seen are first recognized when desquamation begins, unless suspected by the appearance of the tongue and throat or kidney complication.

Atypical cases:

I. Regular course, except for the temperature, which instead of subsiding on the seventh day, continues one or two weeks longer.

- 2. Mild, scanty and short-lived eruption, but with desquamation and tendency to complications.
- 3. Regular course, except that the eruption is irregular in appearance, duration and extent.
- 4. The only symptoms seem to be fever, sore throat and desquamation.
- 5. Severe and prolonged cases, lasting two to three weeks, with no complications, sometimes cause death.
- 6. Malignant cases. Patient seems to be suffering from the intense poison of the disease; the eruption is irregular and dark, sometimes petechial. The temperature is high or sometimes subnormal. The throat is dark red, ulcerated, or membranous; foul breath, cervical glands are very much enlarged. The tongue is thickly coated and later dry and brown. The eyes are congested. Cerebral symptoms are marked. There is hemorrhage from the mucous membranes, vomiting, diarrheea and feeble heart action.

Death is the inevitable outcome and occurs in eight hours to two days, with the child in a state of coma.

- 7. Associated with diphtheria.
- 8. Instead of a catarrhal inflammation of the tonsils and pharynx, we get a streptococcus inflammation. This may vary in intensity. In bad cases the cervical glands are very much enlarged, the throat becoming necrotic during the second week of scarlet fever; there is a yellow and bloody discharge from the mouth and nose, unhealthy fissures form at the edges of the nose and corners of the mouth. Lymphatic glands of the neck may become necrotic with ulceration of the skin, sometimes causing erosion of the large bloodvessels with formation of septic thrombi. This is usually followed by pyemic infection, involving joints and serous

cavities. The temperature is very high. There is a rapid loss of weight. Death occurs in three to five weeks.

- 9. Otitis media is a frequent complication and may come on with symptoms simulating meningitis, which continue until the drum ruptures.
- 10. Cervical adenitis, which suppurates during the second week, is a prominent symptom.
- II. Endocarditis or pericarditis may develop at any time during the disease.
- 12. Inflammation of the joints and muscles occurs as the eruption is subsiding. Hands and feet and muscles of the neck may be affected. There is usually some rise in temperature.
 - 13. Nephritis is a frequent complication.
- A. Acute degeneration—mild during the first or second week.
- B. Acute exudative nephritis—During the second week or third week.

The urine is scanty or suppressed, specific gravity is unchanged, albumen is present in large quantity, also casts and blood. The temperature runs up to 105°, with prostration, headache, nausea and vomiting, as well as dropsy. In some cases there is contraction of the arteries, disturbance of heart action, convulsions, delirium and stupor.

In most cases recovery follows after four weeks. Some cases are fatal.

C. Acute diffuse nephritis—This form belongs to the third week or the period of convalescence. It may be acute or subacute.

The urine is diminished in quantity and contains a

great deal of albumen and very many casts, but no blood. There is no fever and anæmia and dropsy develop gradually.

In all cases of acute diffuse nephritis the disease is apt to continue rapidly, or slowly, or at intervals, until the patient dies, or develops chronic nephritis.

- 14. General cedema without nephritis may develop during the third week.
- 15. Meningitis, pleurisy, bronchopneumonia and peritonitis are comparatively rare complications. Myocarditis and multiple neuritis are sometimes encountered.

In mild cases convalescence is prompt. The child often appears well before the end of the first week. Later, the only evidence of the disease is the desquamation, particularly on the palms of the hands or soles of the feet. In bad cases and those with complications convalescence is slow, and may leave the child weak and anæmic for weeks and months.

Treatment is symptomatic. It is safest to have the child remain in bed for at least 3 weeks, even though no complication may appear and the patient seems well. Keep the patient on a milk diet. For the throat condition give a ½% Solution of Carbolic acid, 3i q. 2h. After the third week if no contraindications present themselves, a daily warm bath will soften the skin and hasten desquamation. The diet, providing that the examination of the urine is negative, should be unrestricted.

German measles (Rubella): A mild contagious disease. The contagion is not easily disseminated and

it is short lived. The source of contagion is not definitely known, but is probably the nose, throat and eyes.

Incubation—14 to 21 days. No symptoms.

Invasion. Sometimes there are no symptoms. We may have fever, headache, convulsions, vomiting, conjunctivitis, pharyngitis, laryngitis. There is a swelling of the cervical glands, particularly the posterior chain.

The symptoms are usually very mild.

Eruption: Very often it is the first sign of the disease. It appears first on the forehead and temples and extends rapidly downward. It is in the form of pinkish points, which may form blotches very much like those of true measles; or they may become confluent and look somewhat like scarlet. In some cases the macules become papular, or even vesicular and pustular. The eruption is also seen in the mouth in the form of small red points, not surmounted by a gray spot, as in true measles. The duration of the eruption is one to seven days. In its progress down the body it often fades in one region before it appears in another. There is usually no desquamation following the eruption.

During the period of eruption there is usually some rise in temperature, a coated tongue, conjunctivitis, pharyngitis, swelling of the glands in the posterior cervical and other regions.

Other possible complications are: Synovitis of the small joints, inflammation of the muscles of the neck, bronchitis and bronchopneumonia.

The cases rarely run a severe course.

Variola (small-pox): A very contagious exanthematous disease.

The contagion is carried by direct contact, clothing; also in the nose and throat of healthy carriers.

One attack protects against subsequent attacks.

Incubation—10-15 days. No symptoms or slight general malaise.

Invasion—2-4 days. Chills, with rapid rise in temperature (103-107°). The pulse is rapid and full, breathing is rapid; there is vomiting and prostration, the tongue is coated, there may be convulsions and delirium. Severe pains in the head and back are characteristic. The mucous membranes are congested. Death may occur during this period.

During invasion, we may have the appearance of a variolous rash, which is not the eruption proper. This may be in the form of points or streaks or blotches, which are red, purple or brownish red. Over these, there may be scattered purpuric or urticarial spots. This eruption may disappear in one spot and appear in another.

Eruption: It first appears on the face and scalp and then extends to other parts of the body and to the mucous membranes.

At first there is an appearance of macular spots, which on the second day become papular. On about the fourth day the papules become vesicular and on the eighth day they become pustular. The vesicles are umbilicated and the pustules are indurated. As the eruption appears the symptoms of invasion subside.

Simultaneously with the appearance of pustules the temperature rises, and we usually get prostration, delirium and stupor. The patient suffers a great deal from the inflamed condition of the skin and mucous membranes. This condition remains for three to eight days.

The pustules may become confluent and symptoms are then more severe and prostration greater, with possible complications in the pericardium, lungs, pleura, gastrointestinal tract and kidneys.

Malignant form may cause death in one to two days. It is characterized by a purplish hue of the skin, with purpuric papules, and hemorrhage from the mucous and serous membranes. The papules may be large and confluent, and later hemorrhagic. In other cases only a few vesicles appear, but there is extreme prostration, and the same disposition to bleeding.

The malignant cases are usually fatal.

The disposition to bleeding is sometimes found in ordinary cases.

Vaccination will modify small-pox, making it milder. These mild cases are just as readily communicable.

Convalescence may be interrupted by boils, erysipelas, gangrene of the skin, laryngitis, pleurisy, pneumonia, myelitis, septicæmia, loss of sight, or hearing.

Mortality depends on the severity of the case. The average case is not fatal.

Treatment: Proper nursing and stimulation. Wet packs to the skin with boric acid solution or weak carbolic acid solution or Liq. Aluminii Acet. The child may be immersed in a warm bath for a few hours every day.

Vaccination: Inoculation of cow-pox. This seems to give immunity for four or five years. If infection with smallpox takes place in spite of the vaccination, the disease runs a very mild course.

A clean vaccination should not give any symptoms except a slight rise in temperature on the seventh or eighth day, sometimes associated with the appearance of a few vesicles about the vaccination, and perhaps a few on the body (vaccinia). Too much inflammation and induration following vaccination is the result of mixed infection.

In instructing as to the care of the vaccination, advise that the sleeve be lined with linen. The sleeve of the undershirt should be loose.

The use of vaccination shields is injurious.

Varicella, Chicken-pox: A mild contagious disease, usually confined to children. It is very rare in adults. It is moderately contagious, the contagion originating from the skin lesions.

Incubation: Two weeks or longer.

Invasion: About two days, with malaise and fever (101°).

The eruption appears in the form of macules, which develop into papules and later vesicles. The vesicles are always found on the scalp and usually on the roof of the mouth, this being a diagnostic point, as the disease may be confused with papular urticaria.

The vesicles sometimes become pustular. At the end of a few days, the vesicles become dry and scab formation results. Scabs dropping off often leave a few scars, similar to those of small-pox. The skin

usually becomes clear two or three weeks after the onset of the disease.

Nephritis is a possible complication.

The serum from the vesicles has been collected and used as vaccine for prophylactic injection to prevent the spread of the disease in institutions. Reports as to the success of this measure are favorable.

Streptococcus diphtheria: This is membranous inflammation of the nose, throat, or larynx most frequently associated with scarlet fever and measles.

Streptococcus is the offending organism.

It is of common occurrence in asylums and institutions, where there is a great deal of dust.

Symptoms: Nasal obstruction, pain on swallowing. If the membrane is in the larynx we get cough and stridor. There is usually a slight rise in the temperature. There is no appearance of intense poisoning and the disease is not serious unless laryngitis or bronchopneumonia develops. Some cases are associated with necrosis of the adjacent tissues, as we sometimes find in bad cases of scarlet fever. Such patients become septic.

Treatment: Frequent irrigation of the nose and throat with hydrogen peroxide, or weak bichloride solution. We may also give a 2% solution of carbolic acid, one teaspoonful swallowed every 2 hours.

True diphtheria: A membranous inflammation of the pharynx, nose or larynx, caused by the infection with Klebs-Loeffler bacillus. The infection is carried by particles of the false membrane. The bacillus is not destroyed by drying and may float in the air. The patient's breath is not infectious except when coughing or sneezing. Children are more susceptible than adults.

The bacillus disappears from the throat and nose about three weeks after the disappearance of the membrane, but it has been known to remain as long as nine weeks.

We may also have healthy carriers who carry the germ in the throat without developing the disease.

Bronchopneumonia is not an uncommon complication.

The cervical glands are enlarged.

Nephritis is also a possible complication. This may be in the form of acute degeneration, acute exudative nephritis or diffuse nephritis. The nerves may become the seat of degeneration.

Symptoms: Sore throat, nasal obstruction or laryngeal stridor, depending on the location of the membrane. The mucous membrane is swollen and red and is covered by a dirty gray membrane, which cannot be brushed off without causing the surface to bleed.

It usually appears on the tonsil at first in spots, which later become confluent, the membrane extending beyond the tonsil. Sometimes the entire pharynx is covered.

Sometimes there is only redness of the pharynx, and the membrane is limited to the larynx or the nasal cavity.

Laryngeal diphtheria (croup) causes a gradually increasing stridor, with labored breathing, and retraction of the supraclavicular spaces during inspiration.

In bad cases there is marked cyanosis.

The breath is foul, and there is difficulty in swallowing.

Nasal diphtheria is frequently overlooked. This is due to the fact that the general condition remains good. Suspicion is aroused by the presence of a profuse purulent and bloody discharge.

Bronchopneumonia may develop on the fifth to the seventh day. It is usually fatal.

Invasion of diphtheria may be sudden with chills, convulsions, sore throat and high temperature. Fever may be absent. The child looks pale and sick, with a temperature of 99-100°.

Vomiting may be troublesome at any time of the disease. Diarrhœa is occasionally present.

The heart action is rapid and we may get an attack of heart failure at any time of the disease or convalescence, even as late as three or four weeks after the onset. The heart stops suddenly or may gradually fail. Kidneys may give symptoms in proportion to the intensity of the inflammation present. These may be nil or those of a severe nephritis.

Course: I. Malignant cases—A. Severe onset, glands swollen, severe inflammation of the mucous membrane with false membrane, stupor, delirium, death in three to five days.

B. Invasion slow, skin pale and cool; dirty brown fluid exudes from the mouth and nose. The patient dies in collapse in three to four weeks.

- 2. Ordinary cases.
- 3. Very mild cases, but dangerous to the community.
- 4. At first mild, but suddenly becoming severe.
 These cases are sometimes serious.

- 5. Larynx first affected. Often fatal.
- 6. Protracted cases. The membrane disappears, only to reappear again after a few days. Recovery is the usual outcome.
- 7. Cases look like a simple inflammation, but the bacteriological examination shows the presence of the Klebs-Loeffler bacillus.

Convalescence is usually slow. Some children are apparently well after one week. We must always bear in mind the possibility of myocarditis.

Sequelæ: Multiple neuritis is frequent complication. There is difficulty in swallowing, with regurgitation of food through the nose, nasal speech, brassy cough.

The muscles of the arms, legs and back may be affected.

The muscles of the eyes are frequently involved. Duration may be weeks or months.

Chronic nephritis may follow acute diffuse nephritis.

Myocarditis is a frequent cause of sudden heart failure.

Treatment: Diphtheria antitoxin should be injected as early as possible. Large doses (10,000-20,000 units) seem to give better results than smaller quantities. In bad cases it is advisable to repeat the dose in 12 hours. In some children the injection will be followed by symptoms of anaphylaxis, which may consist of fever, delirium, pains in the joints and the appearance of an erythematous or urticarial rash.

Locally, there seems to be nothing better than the internal administration of carbolic acid, 1-2% sol., one teaspoon every 2 hours. In cases of laryngeal diph-

theria, where the symptoms are urgent, it may be necessary to do an intubation or tracheotomy, preferably the former.

For the rest, careful nursing is most important. The heart action should be watched very closely. Even in mild cases it is advisable to keep the child quiet and resting in bed for at least three weeks.

It is advisable to give a prophylactic dose of antitoxin (500—1,000 units) to other children in the family, unless they give a negative Schick reaction.

This reaction is positive only in children who are susceptible to diphtheria.

Schick reaction: A needle (about the size of a hypodermic needle) is sterilized and dipped into standard diphtheria antitoxin (100%); the point of the needle is then forced into the skin intradermally (not subcutaneously) (Koplik method). The flexor surface of the forearm is used, and should be cleansed with ether, in preparation for the test.

A positive reaction means the appearance of a red indurated papule (frequently surmounted by a vesicle) after a lapse of 24, 48, or 72 hours.

Typhus fever: An infectious disease characterized by a typical eruption. The specific bacillus causing the disease has recently been identified by H. Plotz. The infection seems to be carried by the body louse. The disease is rare in children under 12 years of age.

Symptoms: First week—Sometimes the onset is preceded by a prodromal period with general malaise, headache, vertigo and loss of appetite. The invasion is usually sudden, with chills, fever, headache, loss of appetite, pains in the back and limbs, restlessness,

sleeplessness and prostration. Sometimes there is marked delirium (mania) and stupor.

The eruption appears between the fourth and seventh days. It makes its appearance in one crop on the arms and legs and trunk. It is in the form of round pinkish blotches, somewhat resembling measles. These spots gradually become darker, or may be dark from the start. There is also a deep mottling of the skin, or general rash. After the eruption has disappeared there is more or less desquamation.

Constipation is the rule, but sometimes there is diarrhea.

Temperature rises rapidly and reaches the highest point between the fourth and seventh day, which is 104-106°. During the first week the temperature is continuous; during the second week it becomes remittent. In favorable cases the temperature drops suddenly at the end of the second week.

The tongue is coated and moist at first; later it becomes dry and brown. The pulse is about 100 at the onset; later it usually is rapid and feeble. It may be rapid and feeble throughout.

Respiration is rapid. During the second week it may be rendered worse by the development of hypostatic congestion, or bronchopneumonia.

Kidneys may develop degeneration or acute exudative nephritis.

During the second week the condition is marked by alternating delirium and stupor, typhoid state, feeble heart and sometimes coma vigil.

In favorable cases, at the end of the second week the patient falls into a normal sleep, which is followed by recovery. Acute meningitis is a dangerous complication.

There may be bleeding from the mucous membranes. Bleeding from the stomach is particularly dangerous.

Thromboses often develop.

Prognosis is unfavorable. Brill's disease, which has been identified with typhus fever, is a particularly mild form of the disease.

Treatment is symptomatic.

Typhoid fever: An infectious disease, characterized by the growth of specific bacteria, by fever, and the development of lesions in the lymph glands of the intestines and mesentery.

Lesions are found in the Peyer's patches, mesentric glands and the spleen. Ulceration of the Peyer's patches may result in perforation and peritonitis. The liver usually shows some degeneration, or acute exudative nephritis; the heart, myocarditis; the lungs may show hypostatic congestion, or pneumonia; the pharynx and larynx, catarrh; the nervous system, neuritis and sometimes meningitis; the muscles, degeneration and sometimes rupture; the femoral veins and sinuses sometimes show thrombosis. Some of these inflammations are caused by the typhoid bacilli; others by other bacteria.

The typhoid bacilli are found in the fæces, urine, blood. The excreta are therefore the source of infection.

The infection is spread by infected water, milk, vegetables washed with infected water, oysters, etc.

Symptoms: In infants the onset is sudden, with high temperature, which remains high during the first

week. During the second week the temperature becomes remittent. The duration of the disease is usually two weeks. Together with the sudden onset, we also get an early blood reaction (Widal reaction), eruption and large spleen. The first week looks like the second week in adults. The blood count is characterized by hypoleucocytosis.

In early childhood the symptoms of the first week last about three or four days.

In later childhood the course is the same as in adults.

The disease is as a rule not so severe in young children, the cases usually being mild.

Temperature: First week—A gradual rise, a little higher in the evening.

Second week—Continuously high. It may be remittent, or even higher in the morning.

Third week-Remittent.

Fourth week—A gradual decline in the temperature. Complications may change the course of the temperature.

Hemorrhage from the bowel is usually followed by a drop in the temperature.

In fatal cases the temperature may continue high until death.

Pulse: During the first week the pulse is slower than would be expected according to the temperature. Later it may become feeble, dicrotic and intermittent.

Cerebral symptoms: Severe headache and restlessness belong to the first week; apathy to the second week; delirium and stupor to the third week. We may get delirium during the first few days.

Eruption: Small, rose-colored lenticular spots,

slightly elevated and disappearing on pressure. These are found on the front of the chest and abdomen and on the back. Usually only a few spots are found. The eruption appears between the seventh and tenth day; earlier in infants and young children. There may be successive crops.

Duration of the eruption is 7-21 days. With each relapse we get a fresh crop. In some cases no eruption appears.

Tongue: At first white and moist and coated in the center; later it becomes dry, brown and fissured. It may be red, glazed and fissured.

Vomiting: Often present during the first week. Later it is caused by tympanitis or peritonitis.

Tympanitis often present. Extreme distention interferes with the heart action.

Diarrhœa is often present. The stools have a characteristic pea-soup appearance. Sometimes we get constipation instead of diarrhœa.

Epistaxis may be an early symptom or it may appear late in the disease. Sometimes bleeding is excessive.

Hemorrhage: Intestinal. Early in the disease it may be due to the extreme congestion of the mucous membrane. Later in the third week it is due to ulceration of the Peyer's patches and may be excessive and fatal.

Eyes: During the third week the eyes may become insensible, with dilated pupils.

Ears: During the first week there may be ringing and buzzing in the ears. During the third week there may be deafness.

Muscles: During the third week we often get sub-

sultus tendinum, tremors, picking at the bedclothes. Urine: May contain albumen and casts, depending on the condition of the kidneys.

Complications: Bronchitis, pyelitis, bronchopneumonia, pharyngitis, laryngitis, suppurative infection of the parotids. During the third week, we may get thrombosis of the femoral veins, or cranial sinuses. This is accompanied, respectively, by pain and tenderness of the vein, with cedema of the leg, or loss of consciousness and hemiplegia, depending on the location of the thrombus. The former may be followed by recovery, but the latter is invariably fatal.

Perforation of the intestine: Shock, followed by symptoms of general peritonitis. Usually the perforation is most likely to occur during the third or fourth week, but may occur earlier or later.

Peritonitis may occur without perforation, produced by inflammation of the mesenteric glands or infarcts of the spleen. It is invariably fatal.

Relapses are very common. There may be two or three relapses. Each is accompanied by a fresh eruption and recurrence of the same symptoms that accompanied the original attack. Relapses may last seven to thirty-five days.

Treatment: Rest in bed; ice-coil to the abdomen. If the temperature runs above 103°, give cool sponge every three hours; for headache, ice-bag to the head; daily low saline enema.

Diet: In young infants, milk in reduced quantity, bottle or breast, at intervals of four hours.

In older infants, milk in reduced quantity, barley gruel, beef juice, puree of potatoes, the yolk of an egg.

In older children, we may give small quantities of

milk, as large quantity may produce tympanitis. The diet may consist principally of barley gruel, with the juice of half a pound of steak, and the yolk of one egg. This may be repeated every four hours. The diet may be varied with potato soup, to which tomato may be added.

For perforation, operate as soon as possible.

For hemorrhage, ice bag to the abdomen and morphine hypodermatically.

As a rule, we must not allow the patient to get out of bed until the temperature has been normal for a few days.

All excreta should be disinfected with 5% sol. of carbolic acid.

Linens should be boiled and dried in the sun.

Drugs are of very little value in the treatment of typhoid fever.

The heart action should be carefully watched and stimulants used as the occasion arises. Of these, camphor, caffeine, and digalen are most reliable. Alcoholic stimulants are also of great value.

High caloric feeding seems to be beneficial in some cases.

Dysentery (colitis): An inflammation of the lower bowel, caused by infection. The organisms principally responsible for colitis are: streptococcus, Shiga, or Flexner bacillus, or amœba coli, bacillus aërogenes capsulatus (gas bacillus).

The disease varies in severity according to the intensity of the infection. It may be acute, subacute, or chronic.

The infection has its origin in contaminated water or food.

Symptoms: Acute symptoms are fever, prostration, septic appearance, frequent small mucous and bloody stools.

At the outset, we have vomiting, colicky pains, and tenesmus.

There is a rapid loss of flesh. The outcome may be fatal in a few days, or the case may pass into the subacute stage. Later it may become chronic. In the chronic cases we find that the patients are anæmic, poorly nourished; there is a slight rise in temperature, the appetite is poor and there are frequent mucous and sometimes bloody stools.

The amœbic form is very rare. Abscess of the liver may be a complication of this form. Amœba coli is found in the stool. It may be fatal in a few days or it may become chronic.

Treatment: Administer a cathartic. Starve with only water for two or three days. Then add small quantities of food gradually. We give milk or barley water. It is advisable to avoid carbohydrate food in all cases, except those in which the Shiga, or Flexner bacillus are found.

Irrigation of the bowel with warm saline solution, or silver nitrate 1-5000. Internally we may give Salol gr. 1-2 with Castor oil ¶ v-x, q. 3 lr.

In amœba cases administer a large dose of ipecac. It should not be given in doses large enough to cause vomiting. Start with gr. i and increase every 2 hours by one or two grains until we reach ten grains.

Instead of ipecac, we may use emetine, the active principle. It may be given in doses of 1/4-1 gr. a day.

Influenza: Infectious disease caused by the presence of the influenza bacillus (of Pfeiffer) in the body, which is usually associated with other bacteria. The onset is marked by headache, prostration, pains in the back and limbs, sometimes chills; also coryza and sore throat. It may be ushered in by vomiting.

Examination of the patient usually discloses nothing but the temperature, coryza and redness about the pillars of the fauces.

The attack varies in severity. The infection may find its way into the circulation and induce various complications.

If the temperature persists in spite of treatment, it usually means the development of some complication.

Complications: Bronchitis, bronchopneumonia, tonsillitis, otitis, sinusitis, adenitis, meningitis, pyelitis, nephritis, gastroenteritis, neuritis. A prolonged catarrhal condition following an acute attack usually means influenza.

Treatment: Phenacetin

Aspirin āā gr. i-ii Sacchar. lactis gr. v

Misse Ft pulv. D. T. D. No XV

Sig. One q. 2 h.

Also give cathartic: Calomel in small divided doses, followed by a saline seems to be the best.

The improvement is usually very prompt.

Continue the powders for two to four days, gradually lengthening the interval between the doses.

Temperature remains normal, unless some complication develops.

Instead of the powders, we may use 1-5% sol. of

carbolic acid for children from 1-5 years of age. The dose is one teaspoonful every two to three hours. The danger to the kidneys is very slight, not great, as is generally believed.

Whooping cough: An infectious disease characterized by inflammation of the respiratory tract and paroxysmal cough. The inflammation is caused by the presence of a specific bacillus (Bordet-Gengou). There is catarrhal inflammation of the nose, larynx, trachea. Sometimes bronchopneumonia develops. The infection is carried from one child to another by means of droplets of sputum, created by coughing. One attack protects against subsequent infection. Incubation is two weeks. The invasion is marked by a catarrhal condition of respiratory tract for two weeks before the paroxysmal cough begins. The paroxysm consists of a succession of short coughs, lasting one to five minutes, followed by a long stridulous inspiration. Frequently the child vomits before the inspiration.

The characteristic whoop may not always be present. At the end of each spasm the patient becomes cyanotic. When the attacks of coughing are frequent, the child may vomit all its food, inanition resulting.

The worst cases are those complicated by bronchopneumonia. Cases vary in severity. Some are very mild, with hardly any catarrhal symptoms. In bad cases we often find subconjunctival hemorrhage, or petechial spots about the neck.

A severe paroxysm may cause cerebral hemorrhage or interstitial emphysema. A sublingual ulcer of the frenum is frequently found. Treatment: Plenty of fresh air. The paroxysms recur less frequently in the open air. Of drugs, none have been satisfactory. Antipyrine reduces the number of attacks. We may give gr. i-v t. i. d.; also belladonna in gradually increasing doses. Vaccine made from the Bordet bacillus has been successful in the hands of some investigators in shortening the course of the disease. When vomiting is excessive, we should advise feeding in very small quantities frequently repeated.

Parotitis (mumps): An infectious disease, characterized by constitutional symptoms and inflammation of the salivary glands, particularly the parotid gland.

Incubation: 14-21 days.

Symptoms: Fever, pain and swelling in the region of the parotid gland. The normal depression behind the inferior maxilla is obliterated, owing to the swelling of the parotid. We may have headache, nausea, restlessness and prostration. In the mouth we notice that the opening of Steno's duct is surrounded by a red area a quarter of an inch in diameter.

The inflammation reaches its height in three to six days, remains stationary for one or two days and then subsides.

If only one parotid, or both simultaneously are involved, the duration of the disease is seven days. If the two glands are affected successively, the duration is ten days to two weeks.

Complications: Metastatic involvement of the testes or mamma.

Most of the cases run a mild course. We may, how-

ever, have excessive high temperature, feeble heart action, or delirium.

Treatment: Isolation; wet dressing to the parotid.

Malaria: An infectious disease due to the growth of the plasmodium in the blood. The infection is disseminated by a mosquito (Anopheles). The earliest form of the plasmodium is found soon after the chill. This appears in the shape of a small hyaline body lodged in the red blood cells, which stains with methylene blue. This gradually becomes larger, containing an increasing amount of pigment, until toward the end of 48 hours, when the body becomes segmented, and finally bursts into spores. This is simultaneous with the chill. This is the earliest and simplest form of plasmodium and is called the **Tertian type**. Double tertian constitutes the quotidian type.

The quartan parasite is slower in development, the cycle extending over 72 hours. It is also characterized by the formation of fewer segments.

The æstivo-autumnal parasite: The spore first appears as a knob attached to the periphery of an erythrocyte, lending it the appearance of a signet ring. After 24 hours, the organism disappears from the circulation, collecting principally in the spleen and the marrow of bones. After three or four days it appears again in the shape of a crescent, attached to the periphery of a red blood cell.

This form is apt to be resistant to treatment.

The first two forms cause intermittent fever, the last form causes remittent fever.

In the intermittent fever, each paroxysm consists of a chill, lasting ten minutes to two hours; fever, which rises in the course of the chill and remains up for two to five hours; lastly, we get the stage of sweating, lasting two to four hours, in the course of which the temperature falls and all symptoms subside. In the course of the attack the patient suffers from headache, vertigo, nausea and vomiting; sometimes restlessness, delirium and apathy. Between the attacks, the patient appears normal.

In the *remittent fever*, the invasion is marked by one or more chills. The temperature begins to rise during the chill. There is remission of the temperature in the evening or in the morning. This fever lasts five to twenty-one days, terminating in recovery or death, or is followed by the intermittent variety.

Pernicious type: Very severe, associated with severe prostration; hemorrhage from the mucous membranes; severe cerebral symptoms; marked gastrointestinal symptoms; congestion of the lungs; hæmoglobinuria.

Hæmoglobinuria may occur in mild cases.

Malarial cachexia: Severe anæmia, with a large spleen, with asthenia, found in patients who have had repeated attacks of malaria.

Treatment: Quinine Sulph. gr. i-v, according to age. This may be given in the form of powders, capsules, or best in solution in Syr. Yerba Santa arom. The dose may be given four times a day.

Sometimes in young children we may use Euchinine in place of quinine. Arsenic is a valuable aid in chronic cases.

Acute articular rheumatism (rheumatic fever): An infectious disease with predilection for tonsils, joints,

serous membranes, endocardium, pericardium and nervous system.

We frequently find the following affections associated: Tonsillitis, arthritis, endocarditis, chorea.

Tonsillitis is very often a forerunner of rheumatic arthritis.

A mild form is of very common occurrence in children

It is most frequent between the ages of 6 and 14 years and is more commonly found in females.

At the onset there may be chills and fever, with pain in one or two of the joints. The inflammation may be very slight, so that the child may be able to walk about; or it may be so severe that the slightest motion may cause excruciating pain.

It is best classified into mild and severe cases.

Mild cases: Children usually give a history of several attacks of tonsillitis. They are thin and anæmic, and complain of pains in the joints. There is no swelling of the joints, and there is little limitation of motion. The temperature is about 99° or 100°. The children may improve under treatment, or may develop a heart murmur, which is usually caused by an affection of the mitral valve.

These children are never very sick, and with rest in bed and proper care the cardiac condition does not become serious, although a slight murmur often persists.

Severe cases: There are severe constitutional symptoms and much prostration. The joints are inflamed and swollen. Several joints may be affected. The temperature runs 100° and 104°. In some cases we get hyperpyrexia.

The heart usually becomes involved and also the pericardium. There is congestion of all the organs and general ædema. Congestion or degeneration of the kidneys, or various forms of nephritis may be complications.

If the heart is not involved, the child may get well in one or two weeks. The usual course of the severe cases in children is to drag out for weeks and months with complications.

The acute condition becomes subacute and chronic with exacerbations. Finally the endocarditis becomes quiescent, leaving the heart with damaged valves and compensatory hypertrophy. This condition is called chronic valvular disease.

Treatment: Rest in bed and salicylates, of which aspirin and novaspirin are best preparations. We may give 2-5 gr. q. 3 or 4 h. If the joints are swollen and painful, we may apply ice-bags.

Diet: During the acute stage the exclusive milk diet is best.

Treatment of the heart condition is described under the head of endocarditis.

Septic arthritis: Under this heading we may also mention scarlatinal and pneumococcic arthritis.

The joint inflammation is a part of the general sepsis.

Suppuration usually follows and the case requires surgical intervention.

Syphilitic arthritis: The joint particularly prone to this form of inflammation is the knee. Both are generally involved. The joint is filled with serofibrinous fluid.

There are usually other signs of syphilis, such as keratitis.

The condition is not very painful and there is no suppuration.

Gonorrheal arthritis: It may affect one or more joints. The joints most frequently affected are the sternoclavicular, the ankle, the knee joint. Look for source of infection. It is a very painful condition.

Treatment: Treat the original condition; rest in bed; at first ice; later heat and passive motion.

Chronic arthritis: It may follow acute arthritis or may be primary. It is similar to the adult condition, and usually affects the small joints. There is generally no heart lesion present. Autointoxication may be an etiological factor. Cases seem to improve with the use of Russian mineral oil. We may give one tablespoonful in the evening and one first thing in the morning.

Still's disease: There is a painless thickening and stiffening of the joints, with fever either continuous or periodical. The knee is first affected and then the wrists and the cervical portion of the vertebral column. Gradually the ankles, elbow and fingers become affected. Together with this, the spleen and glands are enlarged. It seems to be a form of septic infection.

The course of the disease is slow, continuous, or intermittent. It may extend over years. The progress is more rapid in children than in adults. Death is the result of exhaustion, or secondary tuberculosis.

Radiograph does not show change in the bones.

SYPHILIS

Hereditary syphilis: This form is usually found in children. The infection comes from either parent, or both. If only the father had the disease, the mother acquires it, although there may be no symptoms except a Wassermann positive reaction. Colles' law of mother's immunity no longer holds.

If the mother acquires syphilis late in pregnancy, the baby is apparently immune while nursed by the mother (Profeta's law). Here also the baby shows a positive Wassermann reaction, and therefore really has syphilis. Bacteriologically, the lesions are caused by the presence of Spirochæta pallida.

Fœtal syphilis: There is diffuse proliferation of cells in all the organs and at growing points of the bony system; also around small bloodvessels. This cell proliferation fills the connective tissue spaces and exerts pressure on the organ cells, causing atrophy.

Groups of cell proliferation form syphilomata, not gummata, which belong to the tertiary stage.

We do not get the characteristic secondary symptoms, as the infection follows the fœtal development.

Death of the fœtus usually takes place between the 4th and 7th months.

Syphilis in infancy: A. Cases carried over from fœtal syphilis.

B. Cases which seem normal at birth, and later get symptoms.

Eruption in these cases appears during the first three months, most frequently between the 2nd and 6th week of life.

Rhinitis usually appears at birth, even before the eruption.

Rhinitis may be only hyperplastic, or it may be ulcerative with resulting saddle nose.

The eruption is similar to that of the acquired form. The appearance of the eruption is not the first manifestation of the disease, as it may have been present in the viscera, bones and nose.

Skin lesions: Some of these lesions are found only in the congenital form.

Pemphigus.

Diffuse skin infiltration: The skin is yellowish, thick and cracked. Skin on the soles of the feet may be very smooth (no lines), cherry red or dark blue red.

Paronychia is often present.

Scalp: Sebum forms rapidly and is darker in color than in simple seborrhæa. There is a copper-colored area between the crusts. The crusts come off without bleeding.

Circumscribed lesions may be in the form of pemphigus, or maculopapular syphilides. The latter are found most frequently on the flexor surfaces of the arms and in the crural region. Where the two gluteal sides touch they form the so-called condylomata.

The favorite location of the maculopapular syphilides is on the forehead and scalp, where it has usually been preceded by the diffuse skin infiltration. In early congenital syphilis, the roseola of the acquired form is never found.

Papulo-pustular eruption appears in bad cases. Ulceration is not uncommon in the crural region.

Small papular syphilides may appear in recurrences during the second year.

Lesions of the mucous membrane: The mucous membrane of the nose is most frequently involved. Sometimes the larynx is involved, causing aphonia. Peyer's patches may be affected.

Blood: There is a diminution of hæmoglobin and erythrocytes. Nucleated red blood cells are found. There is also an increased number of leucocytes, especially eosinophiles, and myelocytes.

Bone lesions: Where bone forms cartilage, affection begins in intrauterine life; where bone forms in membranes, it begins after birth.

Epiphyseal borders are affected (osteo-chondritis). There is a proliferation of the cartilage cells, necrotic processes, and pathological calcification and thickened periosteum. When cranial bones are affected, we get exostoses.

The marrow at the cartilage borders is often replaced by connective tissue.

Phalanges are often affected (Dactylitis).

The affection is only in the bone and never affects the soft parts, and always begins in the proximal phalanges. This gives the fingers a bottle-shaped appearance; if the distal phalanges are also affected, the fingers assume the appearance of a ten-pin. (In tuberculous dactylitis, the fingers are knob-shaped.) Dactylitis usually appears early in infancy. There is no pain or suppuration.

Clinically, only those cases where there is involvement of the periosteum may be recognized, as the finer changes in the cartilage are disclosed only by a radiograph.

Clinical changes consist of swelling of the epiphyses or middle of long bones. The elbow joint is frequently involved. The swollen portion is nearly always tender.

Associated with the joint affection, there may be some affection of the muscles, causing flaccid paralysis, with more or less pain. When the shoulder joint is affected, the condition is known as Parrot's disease, or pseudoparalysis. In the lower extremities we may have myotonia, or spastic paralysis. The clinical signs of the affection are: swelling of the bones, restricted motion, swelling of the soft parts, separation of the epiphyses and crepitation. The paralyses are the result of muscle affection only.

Skull changes—Four types:

Rickets.

Protuberance of the frontal and parietal eminences.

Periosteal swelling and rarefaction of bone (areas of wasting surrounded by thickened areas).

Hydrocephalus.

Liver affections: The liver is large. It will recede under treatment.

Another form at birth is a large, hard liver with nodules, accompanied by icterus.

Kidney: There is a congestion, simultaneous with the eruption. Later there may be an interstitial inflammation with formation of connective tissue.

Endarteritis: Often present in later infancy, affecting the cerebral vessels and causing encephalomalacia.

Changes in the central nervous system: During the eruptive stage, or just at the end of it, we may get meningitis, serosa, external or internal. This may be acute or insidious. The arachnoid or choroid plexus may be involved, causing hydrocephalus. Hydrocephalus is not as large as in other forms, owing to the hyperostosis.

The condition improves with treatment.

Lumbar puncture discloses high intraspinal pressure, with clear fluid.

Sometimes hydrocephalus is present at birth.

Ocular affections: Plastic iritis, choroiditis, and also diffuse optic neuritis, which may occur during the first few months.

Keratitis belongs to late syphilis.

Lymph nodes: All the glands in the body are enlarged.

Syphilitic relapse in earliest childhood: This, as a rule, does not appear later than the fourth year. As the early symptoms of hereditary syphilis are in utero, most of the manifestation during infancy are really recurrences. There may be an eruption, but the older the child the less likely it is to have an eruption. The most common skin lesions between the ages of two and four years are condylomata in the ano-crural region. There may be mucous patches in the throat and chorioretinitis up to the sixth year of life.

We may have recurrences in the joints, liver (nodular), spleen (large and hard, with anæmia).

The larynx may be the seat of recurrences, causing croup and aphonia.

The kidneys and testicles may be affected.

Late hereditary syphilis: Eyes—Keratitis, chorioretinitis, gumma of the iris, optic neuritis.

Ears—Neuritis acoustica, with deafness (Menière's disease).

Bones—Hyperplastic ostitis, or periostitis. The tibia is most frequently affected, and often becomes bent.

Less frequently we get caries sicca of the cranial bones, causing a rough surface.

Just as in acquired syphilis, we may get gummata of the tibia, which becomes soft and tender to touch in the centre. This results in excavated ulcer and later healing with raised edges.

Other bones may be affected. Affection of the carpus and phalanges may be present, but is not as characteristic as in early syphilis.

Joints—Swelling may be caused by hydrops only, or the swelling of the bone ends. There is less pain than in tuberculous lesion, and there is no suppuration.

Skin lesions: Similar to tertiary lesions of acquired syphilis. There are two main forms: the small nodular and the large nodular syphilides. The small nodular form is of the size of a pea to that of a lentil. It is hard and skin is brownish. At first the skin shows desquamation; later it becomes covered with a crust, simulating lupus vulgaris. The nodules usually show a serpigenous arrangement. It is a most intractable lesion.

The large nodular form is simple subcutaneous gummata, which soften and ulcerate.

The mucous membrane may show gummatous ulceration.

Atrophic rhinopharyngitis and ozæna may be found between the ages of 6-15 years.

Ulceration of the mucous membrane must be distinguished from tuberculosis, in which condition the outline of the ulcers are ragged and very painful.

Hutchinson's teeth: This is an anomaly found in the upper central incisors of second dentition. The dentine is laid bare and there is a crescentic notch at the lower border. The teeth are short and stumpy.

Treatment: For infants it is best to start with calomel 1/10 gr. t. i. d. After a few weeks we may give neosalvarsan ½ gr. intravenously. After that continue the mercury for at least a year. For the intravenous it is necessary to expose the vein.

In older children we may give the mercury in the form of intramuscular injections, which may be administered at intervals of ten days to one week. For this purpose we may use a 20% mixture of salicylate of mercury in albolene.

The dose given is 1/4-1 gr., according to age. This may be continued for two years. After each lapse of six months we stop the injections for one month, during which time we give Pot. Iodide.

In older children it may be advisable to repeat the neosalvarsan three or four times at intervals of two weeks.

Skin lesions may be treated by the application of a 25% blue ointment, or 5% ammoniate of mercury ointment.

After the treatment is completed, examine blood for Wassermann reaction. If the result is negative, stop treatment. Examine blood again after 4 months.

TUBERCULOSIS

Infection: A few hereditary cases have been reported, the infection taking place in utero. In the large percentage of cases the infection takes place during the first three years of life, after which it may remain dormant in some gland. About 75% of children under the age of 10 years will give a positive tuberculin reaction.

Development of tuberculosis depends on weak power of resistance, due either to poor heredity or some exhausting disease. The dormant tuberculous focus becomes active.

The affections in order of frequency are: Tuberculosis of the glands, bones and joints, acute miliary tuberculosis, tuberculous meningitis, tuberculosis of the lungs, larynx and pleura, tuberculous peritonitis.

Diagnosis: Sometimes clinical and physical signs are so well defined that there is little difficulty in recognizing the condition. In incipient cases and in those in which there is an element of doubt, the Von Pirquet cutaneous tuberculin test is of the greatest value as an aid in diagnosis. The method of procedure is as follows: The flexor surface of the forearm is cleansed with ether; the Von Pirquet borer is sterilized by holding over a flame; the point of the borer is then applied to the skin of the forearm midway between the elbow and the wrist; one or two turns of the instrument will shave off the

epidermis; this is the control; the borer is then dipped in Koch's old tuberculin, and the shaving process is repeated in two places, one on each side of the control, 1½ inches away from it; the tuberculin is then allowed to dry.

If active tuberculosis is present, we note in 24 hours the appearance of an area of redness 3/4 inch in diameter around the point of scarification, with central induration. This becomes intensified during the next 24 hours, and then gradually fades, disappearing after about 10 days, leaving a slight pigmentation of the skin.

If the tuberculosis is not active, but dormant, the reaction is delayed and may not be well defined until 48 hours after scarification have elapsed. Then it is only 1/4 inch in diameter, with slight induration. The reaction is the result of an attempt of the circulation to keep the tuberculin out by bringing antibodies to the surface.

In the presence of very active and general tuberculosis, no reaction takes place. This is due to the fact that all the antibodies have been used in fighting the disease and the blood cannot produce any more.

Tuberculous adenitis: Cervical and mediastinal glands are most frequently affected. It is often a prominent factor of the symptom complex known as scrofula. Following infectious diseases, particularly whooping cough and measles, the mediastinal glands are often the seat of tuberculosis, with caseation followed by calcification. These glands often cause a reflex cough, with afternoon temperature and delay in convalescence. Pus may form and rupture into the bronchi, causing sudden death.

Cervical adenitis is a very common condition in children.

The portal of entry for infection may be the throat, nose, ear, abrasions on face, scalp and mouth.

The enlargement of the glands is slow and gradual and painless, with slight rise in temperature.

One or all the glands in the neck may be involved. The glands are hard at first. From this point, with the improvement of the general condition, the tuberculous process may recede, with encapsulation and calcification of the tuberculous foci. On the other hand, softening and caseation often results. glands become adherent to the surrounding tissues and bloodyessels. This terminates in the formation of tuberculous pus. Fluctuation is present. The swelling gradually increases in size, the skin over it becomes thinner with bluish discoloration. ultimate outcome is the development of a sinus, which continues to discharge for an indefinite period. This usually becomes complicated by the invasion of pusforming organisms. When healing finally takes place, the opening is replaced by a depressed scar.

Bone and joint tuberculosis: The parts most frequently affected are: the phalanges, the hip joint, the spine; less frequently, the knee, elbow and ankle.

Dactylitis: The distal phalanges are usually affected, thus differing from the syphilitic form, in which there is a predilection for the proximal phalanges. In the tuberculous variety, therefore, the fingers are knob-shaped. There is a rarefaction of the bone; the periosteum is not affected. This may be demonstrated by means of a radiograph. There may be caseation of the bone, suppuration, and involvement of

the soft parts. The condition is more painful than the syphilitic form.

Coxitis (tuberculosis of the hip joint): The usual history is that following some slight traumatism, the child becomes lame, and often complains of pain in the knee. Upon stripping the child, we note the following: The patient seems to favor one leg; there is apparent lengthening of the leg on the affected side; the normal gluteal fold is either shorter than that on the normal side or completely effaced: there is atrophy of the thigh muscles on the diseased side (measure circumference and compare with normal side); upon passive motion of the thigh, we note limitation of motion and rigidity; with the patient on his back, extension of the thigh causes arching of the lumbar region of the spine; any attempt to overcome the limitation of motion causes pain. In incipient cases the child frequently cries out at night. In advanced cases, walking and standing is very painful. In advanced cases, there is actual shortening of the leg; the distance from the greater trochanter to the horizontal line, drawn at the level of the anterior superior spines (Bryant's line) is short, as compared with the normal side. The bone lesion may be demonstrated by means of the X-ray, and it is usually found in head of the femur. As the disease progresses, there is caseation or softening of the bone. This results in the development of a cold abscess of varying size. A large abscess may open externally and result in the formation of a sinus.

It is very important to recognize this disease early. It is often treated for rheumatism. When in doubt, apply the Von Pirquet test, and obtain a radiograph.

A non-tuberculous arthritis simulating tuberculous disease has been described (Taylor). The X-ray discloses no change in the bones. These cases usually get well after one year.

Treatment: Immobilization, by means of orthopedic braces. Large cold abscess should be aspirated, with careful aseptic precautions. Attention should be given to the general condition. This means fresh air, good food, cod liver oil, etc.

Pott's disease (spondylitis): Tuberculosis develops in the body of the vertebræ. The disease is common in scrofulous children and probably has its origin in some glandular tuberculous focus.

Symptoms vary according to the location of the lesion.

Cervical Pott's: The neck is stiff and sometimes held to one side. There is pain, which radiates down the arms. Rigidity of the upper part of the spine makes the child look awkward.

As the disease progresses, there is caseation of the vertebræ, with development of cold abscesses and angular curvature. The abscess usually extends to the retropharyngeal region and sometimes into the cranium, with serious results. It frequently finds its way to the side of the neck, and opens along the posterior border of the sterno-cleido-mastoid muscle. Pressure on the spinal cord will cause paralysis, which usually disappears with favorable progress of the disease.

Dorsal Pott's: The spine is rigid and over-erect; as the disease progresses, the shoulders appear too straight, and angular kyphosis develops. The child usually complains of pain in the region of the epigastrium and there may be a respiratory grunt. The

walk is characteristic. The child walks as if he were stepping on ice. Any jarring of the spine is extremely panful. On examination, we note that the spine has lost its normal flexibility, and any attempt to overcome the rigidity is painful. Pressure over the spines of the affected vertebræ is painful. As the disease progresses, there is a collapse of the diseased vertebræ with resulting angular curvature. An abscess forms and may burrow down along the psoas muscle and find its way out through the inguinal ring, the triangle of Petit above the crest of the ilium, or Scarpa's triangle below Poupart's ligament. The dorsal kyphosis is associated with a compensatory lordosis (concavity of the lumbar portion of the spine). Pressure myelitis may develop, with resulting paralysis.

Lumbar Pott's: The symptoms are similar to those of dorsal disease. Pain is often referred to the hip and thigh, lower part of the abdomen and genitals.

Sometimes there is a unilateral spasm of the psoas muscle, causing a limp.

Diagnosis: We must bear in mind the following conditions: Rickets, rheumatoid arthritis, typhoid spine, fractures and dislocations, congenital prominence of certain spinous processes, inflamed bursæ over the spinous processes, perinephritis, appendicitis, sacroiliac disease, herniæ, simple weakness, injury to the cord, tumors of the cord.

In diagnosis, X-ray photograph and the Von Pirquet tuberculin test will aid greatly.

Treatment: Rest in bed; extension on a Bradford frame; plaster jacket with body in over-extended position; braces. For cervical Pott's support by means

of a jury mast, which relieves the spine of the weight of the head.

Abscesses may be left alone; may be aspirated; may be treated by the injection of iodoform emulsion; large abscesses may be drained by free incision, irrigated and sutured, unless the infection is mixed, in which case they should be drained. Cases may recover after four or five years.

Tuberculous affection of the joints are marked by slow progress, pain, swelling, rigidity, atrophy of the muscles. The tuberculous focus may be detected by means of the X-ray. The Von Pirquet test shows an active reaction.

Treatment: Immobilization.

Skin of tuberculous infants is often exceptionally dry. It may present tuberculous infection in the form of tuberculids. These appear like acne pustules, or furuncles, but more sluggish in progress and of a bluish tint.

Acute miliary tuberculosis may develop from a tuberculous focus in the body. There is rapid emaciation, fever; later delirium, stupor, coma and death, which takes place in two or three weeks.

Von Pirquet reaction is usually negative.

Meningitis: May be only a part of general tuberculosis, or the meninges may be infected per se. The symptoms are described under the head of meningitis.

Tuberculosis of the lungs, pleura and larynx are not as common as in adults. The base of the lungs is often the seat of the disease, instead of the apex. In infants, the disease not uncommonly develops after a prolonged attack of whooping cough. In some cases

mediastinal glands seem directly to infect the contiguous lung as evidenced by X-ray.

The physical signs differ in no way from those of adults.

Tuberculous peritonitis: Described under the head of peritonitis.

Treatment of tuberculosis. We rely principally on fresh air and good food. In glandular affections tuberculin treatment has met with some success. We may begin with one-millionth of a milligramme, increasing the dose very gradually, so that the twelfth dose should be 1/10,000 mgm. Doses may be given at weekly intervals, intravenously or subcutaneously.

DISEASES OF THE NERVOUS SYSTEM

Acephalia: Absence of the brain and spinal cord.

Anencephalia: Absence of the brain:

Porencephalia: This may be congenital or acquired. The brain substance may in some part be replaced by a cavity.

Microcephaly: The origin of this affection is arrested development (not premature ossification of the cranial bones, with closure of the fontanelles). The true form is simply arrested development. The pseudoform is the result of intrauterine disease, resulting in degeneration, cicatrization, cyst formation and hydrocephalus. The pseudoform shows spasticity, or flaccid paralyses, epilepsy, athetoid movements and pseudo-bulbar symptoms (dysphagia, etc.).

Both forms show marked idiocy.

The skull is brachiocephalic, the forehead receding; the occiput is flattened and the circumferential measurement is less than normal (13½ in. at birth).

Prognosis is bad. The body may develop normally. **Hydrocephalus:** This may be congenital or acquired; external or internal; acute or chronic.

Congenital Hydrocephalus: Usually it is internal, but it may be external (intrauterine meningitis). The internal is probably caused by some inflammation causing a vascular disturbance, with excessive secretion from the choroid plexus of the brain.

The quantity of fluid may be as much as five litres.

The symptoms depend upon the amount of destruction of brain tissue by pressure. The fontanelles are open, and the head is large. Intelligence may range from normal to imbecility. There is strabismus, spasticity, and paralysis.

In favorable cases the child may grow up to be

pretty nearly normal.

Acquired external—Acute—Meningitis.

Chronic—Tumors and syphilis.

Acquired internal—Acute—Meningitis.

Chronic—Syphilis, trauma, tumors.

Treatment: Potassium iodide. Lumbar puncture, repeated every two or three weeks, depending upon the rapidity of recurrence of intraspinal pressure. This has yielded some favorable results.

If, owing to some inflammatory process, there is an obstruction of the foramen of Majendie, cutting off the communication between the ventricles and the subarachnoid space, lumbar puncture will be of no avail. We may then tap the ventricles, by puncturing through the anterior fontanelle.

Operations have been devised for drainage of the ventricles into the venous sinus (cisterna magna). Results from these have not as yet placed them beyond the stage of experimentation.

Meningocele: Naso-frontal,—Naso-orbital,—Sagittal,—Occipital. This is a protrusion of a sac through a weak spot in the cranial suture. The wall of this sac consists of dura mater and meninges, and contains cerebrospinal fluid. The sac is covered with aponeurosis and skin. The chief characteristics are: Disappearance on pressure, increase in tension when the baby cries, and pulsation.

Encephalocele: This condition is similar to the preceding, but the sac contains cerebral substance. It does not, therefore, disappear on pressure.

Encephalo-cystocele: Much larger than the preceding, and includes the ventricle.

Spina Bifida: A defect in the bony arch results in the protrusion of some of the contents of the spinal canal. There are various degrees.

Thus we may have: meningocele, myelocele, myelocystocele.

Marked cases are accompanied by symptoms of myelitis, with club feet, bladder and rectal symptoms, etc.

Spina bifida occulta: There is a defect in the vertebral arch, over which a small spherical protrusion is found. This has a central depression and is covered with cicatricial tissue and sometimes hair. There is no paralysis, but we may have pes equinus and sensory disturbances. Bladder symptoms may appear in later childhood, probably due to the formation of cicatricial bands in the course of the growth of the child, causing pressure on the cord. Removal of these bands is followed by recovery.

ENDOGENOUS DISEASES OF THE NERVOUS SYSTEM

These may involve the spinal cord, nerves, muscles. They may appear after a few months or years of normal function.

It is evidently due to the fact that the nervous system becomes used up in a short time and has no power of regeneration.

Endogenous conditions are hereditary and are not dependent on any inflammation. They are also not dependent on any outside or exogenous influence.

- A. Spastic family affection.
 - I. Spinal.
 - 2. Cerebrospinal symptom complex.
- B. Hereditary Ataxia (Friedreich's disease).
- C. Muscular atrophies.
 - I. Spinal muscular atrophies.
 - a. Cases in adults not occurring in families.
 - b. Early infantile spinal muscular atrophy.
 - 2. Neural form of progressive muscular atrophy.
 - 3. Dystrophy of muscles.
- D. Bulbar diseases. Progressive bulbar paralysis. Also:
 - a. Myasthenia.
 - b. Amaurotic family idiocy.
 - c. Thomsen's myotonia.
 - d. Periodic paralysis of the extremities.

A.—SPASTIC FAMILY AFFECTION

1. Spinal symptom complex: Hereditary symptoms do not always appear in childhood, but may make their appearance in mature age.

The development is normal at first. Then pyramidal tract sclerosis develops. This is followed by weakness of limbs, with dragging and awkwardness. Then gradually and slowly, spasticity, with pes equinus, develops. Arms rarely become involved. Bladder and rectum remain normal. Reflexes are very much increased. Mental development is somewhat below par. The patients finally drag their feet with great difficulty, with the aid of a cane. The walk is spastic. They are rarely bedridden. Life is not shortened.

2. Cerebrospinal symptom complex (family spastic paralysis): There are extensive segments of degeneration in the pyramidal and lateral cerebellar tracts and posterior columns.

Symptoms are variable. We have spasms of legs, which interfere with walking and result in contractures. We may get nystagmus, slow speech, strabismus, optic atrophy, awkwardness of the hands, tremors, choreic and ataxic movements, intelligence affected, symptoms of bulbar paralysis (disturbance of deglutition or speech, forced laughter), weakness of sphincters. There may be also muscular atrophy and pseudohypertrophy. The progress of the disease is

very slow and does not materially interfere with the patient's comfort.

When the disease is fully developed and the patient is confined to bed, bedsores, cystitis and pneumonia are apt to become serious complications. The progress of the disease may be arrested for weeks or months.

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P.—HEREDITARY ATAXIA (FRIEDREICH'S)

There are two forms:

- a. The original Friedreich's ataxia. The lesion is in the posterior column, and sometimes in the pyramidal tracts.
- b. Cerebellar form. In addition to the posterior columns, the cerebellum is also involved.

Symptoms of the first form appear during child-hood; those of the latter form in later years (at 20 years).

In Friedreich's ataxia, there is absence of patellar reflex, nystagmus, slow scanning speech, pes equinus, Argyle-Robertson pupil, the Romberg symptom, static ataxia, and sometimes choreic, or athetoid movements. In the cerebellar form there is more ataxia (cerebellar gait), reflexes are increased, and there is strabismus, optic atrophy, more tremor and wabbling of the body.

Sensory symptoms are rare. Muscle sense is intact. Bladder and rectal symptoms are present only in advanced cases.

The progress of the disease is very slow. It usually takes five to ten years.

The patients remain bed-ridden only in the last stages.

Death is generally the result of some intercurrent disease (frequently pneumonia).

C.—MUSCULAR ATROPHIES

1. Spinal muscular atrophy.

a. The adult form, not occurring in families, and rare in children. The lesion is in the anterior horn of the cord (spinal nerve cells). There is atrophy in the thenar and hypothenar muscles, atrophy of muscles of the shoulder girdle. Paralysis is preceded by fibrillary twitchings. There is a reaction of degeneration (change in the electrical reaction, i. e., no response to the faradic current; with the galvanic current, there is a stronger reaction to the closure of the positive pole (anode), than the negative pole (kathode)).

The progress of the disease is very slow, and takes years for full development.

The Amyotrophic form also involves the pyramidal tracts, and therefore shows spasticity in the partially paralyzed muscles. The course is more rapid. Death is due to bulbar palsy (paralysis of the diaphragm), or some intercurrent disease.

b. The infantile spinal atrophy. The lesion is in the anterior horn of the cord. Symptoms appear in the second half of the first year. This form is familial. There is weakness in the legs and back, shoulder, then the back of the neck, and finally hands and feet.

Fibrillary twitchings are not constant. Reaction of degeneration is present. The course is one to four years. There is no chance of recovery. Death occurs as a result of bulbar palsy, or some intercurrent disease.

2. The neural form of muscular atrophy (Peroneal Type) (Charcot-Marie-Tooth). There is degeneration of the nerves. Sometimes there is also some spinal degeneration. The peroneal group of muscles is usually affected, causing a drop foot, with high-stepping walk. The extensors of the hand may also be affected, causing the claw hand. We get fibrillary twitching: Reaction of degeneration is usually present, or there may be absence of any electrical reaction, faradic or galvanic.

There may be pain and hyperæsthesia, or absence of pain and tactile sense.

Progress is very slow, and may be interrupted by remissions and exacerbations.

3. Muscular Dystrophy:

Juvenile form (Erb's): It usually appears in late childhood, or puberty. It first affects the muscles of the shoulder girdle. There is true or false hypertrophy of the muscles, followed by degeneration. Later it affects the muscles of the pelvic girdle, and lastly the thigh and back, rarely the abdominal muscles.

There is no fibrillary twitching or reaction of degeneration in any of the muscular dystrophies.

Facio-scapulo-humeral form (Landouzy-Dejerine): The face assumes a mask-like appearance. The lips may be hypertrophied. Later the muscles of the shoulder and arms may be affected.

Hereditary form: Occurs in children 8-10 years of age. The muscles of the back are weak, causing lordosis. There is no hypertrophy.

Pseudohypertrophy: The calves, shoulders, arms and back are affected. The child looks athletic; the muscles are weak. The child, to raise itself from a

sitting posture, must climb up on its legs. It'is difficult for the patient to raise his arm. There is lordosis and a rocking walk. Reflexes are present, but weak. There is no reaction of degeneration. Mentally, the patients are below par. The disease progresses very slowly.

D.—BULBAR DISEASES

1. Infantile progressive bulbar paralysis.

It usually occurs in brothers and sisters, appearing between the ages of six to ten years.

There is disturbance of the muscles of deglutition and speech, as well as those of the face. Respiration is irregular. The outcome is fatal.

2. Progressive ophthalmoplegia.

It may involve all the ocular muscles, or individual muscles (usually levator palpebrarum and abducens). Life is not endangered.

Myasthenia pseudoparalytica: This has not been seen in children, but in young individuals. The bulbar muscles, those of the face, back and extremities may be affected. The muscles are weak and not capable of more than three contractions in succession. The weakness of the muscles progresses and finally the patient dies in a manner similar to bulbar palsy.

There is inanition, asphyxia, and entrance of food into the trachea.

Amaurotic family idiocy (Tay-Sachs disease): In this condition there is rapid degeneration of nerve cells. It is most frequent in Russian Jewish children, but does not exclusively belong to that race.

The onset of the disease is during the second half of the first year of life. The child progresses normally during the first six months, then goes back. The baby cannot hold up its head or sit up. Gradually the whole body becomes flaccid. The child becomes blind and idiotic. Later we get convulsions and spasticity.

Duration of the disease is 18 months to two years. Death is usually from some intercurrent disease.

The characteristic sign is on the retina. There is pale discoloration of the macula lutea, with a cherry red spot, corresponding to the fovea centralis.

Myotonia congenita (Thomsen's disease): This is a congenital condition and more frequent in boys than girls. It first appears in the course of athletic work. It affects all the muscles, even those of the eye and speech.

There is sudden contraction of the muscles, resulting in a spastic state, which lasts a few seconds to half a minute, after which the contraction is normal and the intended act, whether brief or sustained, can be performed. Thus, when the patient shakes hands, he is unable to let go; when he takes a sudden step forward, he becomes rooted to the ground. There may be sluggish and awkward speech.

Erb's myotonic reaction: Tapping of the muscle brings out a swelling, with a central depression. A mild faradic current brings on a clonic contraction, which continues for some time after the cessation of the current. Sometimes there is reaction of degeneration.

Treatment of endogenous diseases is hopeless. We may give massage, hydrotherapy and electricity.

Syphilis of the nervous system: Any part of the nervous system may be affected. Thus we get a

varied picture, which may resemble almost any form of nervous disease. Gumma of the brain may act like a tumor. We may get symptoms of multiple sclerosis, hydrocephalus, spastic paraplegia, imbecility, etc. The Wassermann and luetin tests are of great aid in diagnosis.

Treatment: Antisyphilitic.

Tuberculosis of the nervous system: It may affect the meninges, or brain substance. Pressure caused by tuberculous spondylitis (Pott's disease) will cause symptoms due to pressure on the cord. This is brought about by narrowing of the canal by displacement of the vertebræ, or abscess formation, thickening of the dura, etc.

The symptoms depend on the location of the lesion. Cervical spondylitis results in paralysis and atrophy of the arms and spastic paresis of the lower extremities. Dorso-lumbar spondylitis results in a lesion resembling transverse myelitis. There is spastic paralysis, bladder and rectum symptoms, bed sores. In bad cases we may have atrophic paralysis caused by actual destruction or degeneration of a section of the spinal cord. If the lesion is so high as to cause pressure on the medulla oblongata, we get symptoms of bulbar palsy.

Prognosis is usually favorable and depends on the cure of the causative disease.

Encephalitis: It may be congenital, infantile, or it may occur in older children (2-4 years). The congenital form results in cerebral atrophy with hemiplegia, imbecility, etc.

The infantile form is usually very severe and results in death in one or two weeks.

In older children it varies in intensity and outcome. Prognosis as to life is usually favorable.

It is of infectious origin and frequently follows measles, diphtheria, pertussis, or scarlet fever. It may be a phase of epidemic polio-myelo-encephalitis.

The onset is sudden and resembles meningitis. Temperature is 104-5°. There may be convulsions and vomiting, which may be repeated, stupor, coma, opisthotonos, Kernig and Babinski sign, fontanelles somewhat bulging. After a few days paralysis develops, and frequently strabismus. The pulse is rapid. In severe cases there may be cardiac or respiratory failure. In milder cases there is a sudden and unexpected recovery after a week or two.

Lumbar puncture shows high intraspinal pressure, with fluid, which is clear, seemingly sterile, containing globulin; microscopically lymphocytes are found.

Results in cases which recover depend on the extent of the disease. Recovery is rarely complete. We may have hemiplegia, imbecility, localized palsies, strabismus, epilepsy.

When the third ventricle is involved, the condition is called polioencephalitis superior. When the fourth ventricle is involved, it is called polioencephalitis inferior.

Treatment: Ice-cap, bromides, etc. Later we may give iodides.

Brain abscess: Traumatic.

Otitic.

Metastatic—multiple, following suppuration elsewhere, bronchiectasis, peritonitis.

Infectious—following meningitis, influenza, typhoid. Idiopathic—Cause undiscoverable.

There are three stages: (1) Initial, (2) well developed, (3) terminal.

Symptoms: I. Initial stage—headache, vomiting, chills, fever. This stage lasts one to six days. This is usually followed by a latent period, when there are no symptoms present, with the exception of occasional attacks of headache, chills and fever. Optic neuritis may also be present. This period rarely extends longer than a few months.

The second stage then develops. Headache, less severe, becomes then localized, sometimes corresponding to the location of the abscess. Temperature is normal, or subnormal. The pulse (irregular, sometimes rapid). Convulsions are more frequent in children. Respiration is irregular, sometimes Cheyne-Stokes. Vomiting and rigidity of the muscles of the back of the neck are more common in cerebellar abscess; also unsteady gait, vertigo. Paralysis may develop, depending on the location of the abscess.

Thus: In the temporal region—word-deafness.

In the left frontal—aphasia.

Motor convolutions—hemiplegia, paraplegia, oculo-motor palsy, facial palsy, etc.

Occipital lobe-blindness.

Frontal lobe—psychic changes, loss of memory, inability to concentrate.

The medulla and the pons varolii are very seldom the seat of the abscess. The abscess usually attains great size before the appearance of localized symptoms. Third stage: The patient sinks into a state of stupor and coma alternating with delirium. The abscess may rupture into the ventricles, causing sudden death or death in a few hours. Pus may find its way to the surface, causing meningitis.

Sometimes brain symptoms may be absent and

death occurs from pyemia and marasmus.

Treatment: The only chance of recovery is the successful outcome of an operative procedure. This may be attempted if the abscess is localized and if it is not multiple.

Sinus thrombosis: I. Marantic.—This is found in sick babies (endocarditis, prolonged gastroenteritis, tuberculosis, syphilis, etc.). It is rarely recognized. Longitudinal sinus is usually affected.

Symptoms are: Convulsions, somnolence, dilated

pupils, strabismus.

2. Secondary form (phlebitic).—Follows otitis

media, erysipelas, suppuration of the orbit, etc.

Symptoms are indefinite: Chills, intermittent fever, convulsions, eye symptoms, somnolence. The symptoms are obscured by the original condition. When the thrombus extends into the jugular vein we may have pain on motion of the neck and upon swallowing; the vagus, glossopharyngeal and spinal accessory nerve (going through the jugular foramen) may become affected, causing bulbar symptoms.

It is usually fatal. Early operation in cases affect-

ing the lateral sinus will save 50%.

Cavernous sinus thrombosis may be accompanied by the following symptoms: Swelling of the eyelids, inflammation of the orbital contents with disturbance of vision, tri-facial neuralgia. These symptoms may be masked by those of general pyemia.

Poliomyelitis: A disease of infectious origin, showing predilection for the anterior horns of the cord. The specific germ has been found in the cerebrospinal fluid. It is so small that it passes through a Berkefeld filter.

Cerebrospinal fluid injected into the cord of the monkey will produce symptoms of the disease.

This disease, while showing predilection for the anterior horns of the cord, may affect other parts of the nervous system. Thus the disease may be located in the cerebrum, cerebellum medulla, sensory ganglia, and peripheral nerves.

The usual onset is fever, anorexia, vomiting, rapidly followed by paralysis. Paralysis may come on over night, apparently without any initial symptoms. The onset may be very severe and may be ushered in by convulsions and meningeal symptoms resembling meningitis or encephalitis.

Paralysis may continue to increase for two or three days, and then is followed by improvement, which varies with the amount of damage effected by the disease

The distribution of the paralysis, in order of frequency, is as follows: Two legs, one leg, one arm, one leg and one arm (same side or opposite), one arm and two legs, muscles of the back, abdominal muscles, muscles of the face and neck.

Paralysis is flaccid. Reflexes are diminished or absent. Sometimes reflexes may be present, depending on the muscles affected. Reaction of degeneration

is present. R. D. means failure to respond to the faradic current and the presence of a stronger reaction to the closure of the positive pole than that of the negative pole with the galvanic current. Muscles that show a normal electrical reaction after a few days will recover; muscles that do not improve after six months will remain paralyzed for life.

Sometimes there is pain in the affected muscles at the onset.

The skin of the affected limbs is cold. Joints supported by the affected muscles are flail.

There may be trophic disturbances and arrest of development, so that the affected extremity will be shorter than normal. When the muscles of the back are affected, we get lordosis. When the abdominal muscles are paralyzed there is protrusion of the abdominal wall.

When the neck muscles are affected, the head drops. Bladder and rectum are rarely affected.

Treatment: Rest in bed; urotropin, bromides; later massage and electricity, potassium iodide and tonics.

Contractures may be prevented by orthopedic appliances.

Permanent deformities may be dealt with by the orthopedic surgeon.

Myelitis (Softening of the spinal cord): Causes: exposure to cold, infectious diseases. What may at first appear like myelitis may develop into poliomyelitis.

Myelitis may be transverse or diffuse.

It begins with high temperature, which may last a few days.

There is paralysis of the muscles corresponding to the location of the lesion. Reflexes in these muscles are diminished or absent.

Below the site of the lesion we get degeneration of the motor tracts, with corresponding paraplegia, and rigidity of the muscles.

Reflexes of the rigid muscles are increased.

There are areas of anæsthesia.

There is also a loss of control of the bladder and rectum.

Cystitis and bedsores are apt to develop.

Landry's paralysis (Acute ascending paralysis): The lesions are those of fulminant ascending poliomyelitis, with corresponding ascending paralyses, ending in bulbar palsy in one to one and a half weeks. Sensory nerves, bladder and rectum are not affected.

The disease may follow some infectious disease.

It is a severe form of anterior poliomyelitis.

Neoplasms of the central nervous system: More common in children than adults.

The most common form is the tuberculous granuloma.

The symptoms may be divided into those which are caused by pressure, and those caused by the location of the tumor.

Pressure symptoms are: headache, vomiting, vertigo, choked disk, convulsions, slowing of the pulse. Headache may be general or at the seat of the tumor. Sometimes pain may be elicited by percussion of the

skull at the site of the tumor. Headache may be constant or intermittent.

Variation of the intensity of the headache usually means a vascular tumor, such as glioma or sarcoma.

Vomiting means tumor of the cerebellum, crura cerebri or base of the brain. This may be accompanied by palsy of the ocular muscles and vomiting. Choked disk may not be present. It is most commonly found in tumor of the cerebellum and the base of the brain. If the choked disk is unilateral the tumor is located on one side of the optic chiasma.

Hemianopsia means disease of the chiasma.

There may be hebetude and stupor.

Convulsions are frequent at the onset of brain tuberculosis in children.

It may also be a late symptom of the same condition.

At first we get a slow pulse (irritation of the vagus). Later we get a rapid pulse (paralysis of the vagus).

Focal symptoms: These depend on the location of the tumor, and are caused by the affection of the brain tissue or pressure.

At first there are irritative symptoms, such as choreic and athetoid movements; later we get convulsions and finally paralyses.

Speech centre, motor area, etc., may be involved.

Diagnosis: From infantile palsy by progress of the disease.

From syphilis—Other symptoms of the disease, Wassermann and luetin reactions and treatment.

Must also distinguish from encephalitis, meningitis and abscess of the brain. X-ray and lumbar puncture may aid in diagnosis. The latter may not always be

Cysticercus floating free in the ventricles will at first simulate hysteria or neurasthenia.

Treatment: Symptomatic. Few cases are operable. Always try antisyphilitic treatment.

Tumors of the spinal cord: Symptoms resemble myelitis and depend on the location of the tumor. Pain is a prominent symptom.

Multiple sclerosis in children is either endogenous or the result of encephalomyelitis.

Symptoms are paresis, tremors and paresis of the eye muscles.

Cerebral hemorrhage: Causes: instrumental or delayed delivery, whooping cough, purpura, diseases of the brain, particularly sinus thrombosis or trauma.

Infantile paralysis: Terminal condition of various diseases of the brain, congenital or acquired thus:

Symptoms: Microcephalus—General rigidity, idiocy, convulsions.

Unilateral Porencephalus—Spasticity, hemiplegia, idiocy, convulsions.

Bilateral Porencephalus—Bilateral hemiplegia, idiocy, convulsions, sometimes pseudobulbar palsy.

Intrameningeal hemorrhage (Birth injury)—I. General rigidity, with little or no dementia, convulsions (Little's symptom complex).

- 2. Paraplegia, rigidity, without dementia or convulsions.
- 3. Simple hemiplegia, with feeble mind and spasms.

4. Bilateral hemiplegia, feeble mind, spasms, possibly pseudobulbar palsy.

Premature birth (Intermeningeal hemorrhage): Paraplegia rigidity, without dementia or convulsions.

Head injury (Extrauterine, with hemorrhage or injury to the skull): Hemiplegia, often with spasms and feeble mind.

Inflammatory affection in one-half of cerebrum (Hemorrhage and softening): Hemiplegia, with hemiplegia and feeble mind, also post-hemiplegic motor disturbances.

Embolism: Hemiplegic convulsions and feeble mind.

Inflammatory affection of both cerebral hemispheres: Bilateral hemiplegia, feeble mind and convulsions, possibly pseudobulbar palsy.

Inflammatory affection in the region of basal ganglia: Hemiplegia, possibly choreic palsy and athetosis.

Inflammatory affection of the medulla: Paralysis of the ocular muscles and bulbar symptoms, without spasms or dementia.

Facial palsy: 1. Rheumatic (Bell's). Cases usually recover after a few months.

- 2. Birth paralysis, due to pressure by forceps. Recovery depends on the amount of injury.
 - 3. Secondary to ear disease.

Multiple neuritis: Inflammatory disease of the peripheral nerves. The affection is usually symmetrical and sometimes extends up to the anterior horns of the spinal cord.

Causes: It may follow infectious diseases, such as diphtheria, scarlet fever, mumps, influenza, typhoid, beri-beri.

It may also be caused by poisoning with alcohol, arsenic and lead.

Sensory symptoms may or may not be present. These are: paræsthesiæ, hyperæsthesiæ, anæsthesia, loss of muscular sense with ataxia.

Motor symptoms: paresis or paralysis of muscles, symmetrically distributed. One group of muscles or several may be affected.

Reaction of degeneration is present. Reflexes are absent.

Bladder and rectum are not affected. There are no trophic disturbances. Course of the disease usually extends four weeks to several months.

Prognosis is good.

Diphtheritic paralysis may occur early, before the recovery from the disease or two or three weeks after apparent recovery.

This form of paralysis seems to show predilection for the muscles of the palate and larynx, but other muscles may be affected, particularly those of the neck and back. The symptoms are: difficulty in swallowing, with regurgitation of food through the nose; nasal voice, brassy cough, ocular palsy. There may be aspiration of food with secondary pneumonia. There is also danger of sudden heart failure. This may be caused by myocarditis or affection of the nerve supply.

Alcoholic paralysis is rare in children. The characteristic signs are: Drop foot, pain on pressure of muscles, ataxia. Prognosis is good upon withdrawing the cause and rest in bed.

Lead palsy: Colic, anæmia, sometimes blue line on the gums, drop foot and wrist, dragging pains in the limbs. Remove the cause and give iodides.

Arsenical poisoning: There are symptoms of polyneuritis, little pain, sometimes trophic disturbances (hyperidrosis).

Hemiatrophy of the face: This condition is probably due to degeneration of the trigeminal nerve. Treatment: Subcutaneous injection of paraffine in order to make the face look more symmetrical.

DISEASES OF THE MUSCULAR APPARATUS

Congenital absence of muscles.

Inflammation of muscles: Primary—Cause, unknown. Trichinosis.

Acute myositis is milder in children than in adults. The onset is marked by fever, swelling of the face and body; the muscles are hard, doughy and painful. The patient is unable to move or swallow. The heart and respiratory muscles may become affected, ending in death. Recovery may follow after a few weeks, or the case may become chronic, with exacerbations.

Trichinosis: The parasite enters the intestinal tract and then finds its way to the muscles by way of capillaries. Once in the muscle, the parasites cause inflammation and become encapsulated.

The clinical picture is the same as that of simple myositis.

X-ray may show the encapsulated parasite. Embryos and eggs may be found in the fæces. The blood is characterized by the presence of a large percentage of eosinophiles.

Frequently the encapsulated parasite becomes calcified and recovery follows.

Ossifying myositis: Found principally in children. The cause is unknown.

It begins with fever, pain and swelling of the

muscles, which become hard and remain so. Finally bony kernels form. The disease takes years. Prognosis is grave, as there may be interference with respiration and swallowing.

Treatment: Hot baths and potassium iodide.

FUNCTIONAL DISEASES OF THE NERVOUS SYSTEM

Spasmophilia: This is a condition marked by extreme irritability of the nervous system. This irritability is found most frequently in children suffering from rickets. It is manifested by a tendency to develop:

- I. Convulsions
- 2. Tetany
- 3. Laryngismus stridulus.

Convulsions may occur with slightest provocation, such as the mildest gastrointestinal disturbance or mild febrile condition.

Tetany is characterized by a tonic contraction of the muscles of the upper extremity; the fingers are held together; the thumb turned into the palm.

In laryngismus stridulus there is a sudden cessation of respiration; the child turns pale and livid; after about a minute there is stridulous inspiration and the appearance of the child improves.

True laryngismus is sometimes simulated by the cessation of respiration at the end of a crying spasm. This is often found in children with a bad temper.

The presence of spasmophilia is characterized by the following signs:

Trousseau's sign: Pressure over the large nerve trunks of the arm produces tetanic contraction.

Chvostek's sign: Tapping of the branches of the facial nerve (with the finger or rubber hammer) results in contraction of corresponding facial muscles.

Erb's sign: The electrical irritability is very much increased.

Thus: Normally it requires 1.4 milliamperes to produce a contraction with the kathode (negative pole) on the make of the current; and 2.2 milliamperes with the anode (positive pole).

In spasmophilic infants only 0.7 milliamperes are required for the kathode and 1.1 for the anode.

Treatment: This requires careful attention to the underlying condition, rickets.

For extreme cases it may be necessary to use bromides in the beginning. Careful attention to nutrition is most important.

Nodding or rotating spasm (Spasmus Nutans, Spasmus Rotatorius): The affection occurs between the third and eighteenth month. It seems to be the result of a function of affection of the spinal accessory nerve. There is an intermittent contraction of the sterno-cleido-mastoid muscle. If both sides are affected we get a nodding spasm; if only one side is affected we get a rotatory spasm.

It is associated with nystagmus, unilateral or bilateral. Sometimes we also find a convergent strabismus

It usually lasts a few months.

Nystagmus: There is an oscillatory movement of the pupil which may be horizontal or vertical.

Causes: Errors of refraction, disease of the choroid or retina, hydrocephalus, insular sclerosis, tuberculous meningitis and other diseases in which the eye-

sight is impaired. It is found in almost any organic disease of the nervous system. In concussion of the brain it is transient.

Only cases caused by some condition in the eye are amenable to treatment. Cases of transient nystagmus have been reported after diarrhoa, which disappear after irrigation.

Hiccough (Singultus): Causes: Full stomach, swallowing of air, indigestion, cold feet, chilling of the surface of the body after a bath, transferring the baby from a cold into a warm room.

In older children it may be a neurotic condition.

Treatment: Hold the baby up after a feeding to aid expulsion of air or gas in the stomach. Avoid chilling; hot water bag to the feet.

In older children chloral and antipyrine may be used.

· Chorea minor: A disease of the nervous system which seems to be caused by the same infection which is the etiological factor in rheumatic fever.

The affection is frequently associated with tonsillitis, acute rheumatic fever and endocarditis. It has been sometimes called cerebral rheumatism.

Symptoms: In the ordinary mild cases the child is pale, ill-nourished, irritable, restless and fidgety, cannot sit still. We often note the change in temperament and loss of power of concentration.

The child may complain of pains in the joints or else there may be history of rheumatism. We also note that the child is inclined to drop things. There is twitching of the hands and face and later also the lower extremities. The child may sometimes show a certain hesitancy of speech. Where speech muscles are markedly affected the speech is unintelligible. There may be a disturbance of respiratory muscles, causing a jerky respiratory movement.

The following is a good method of evoking twitching in incipient cases (Heiman): Get hold of the child's hands, palm to palm, grasping the patient's thumb firmly between your index and middle fingers; then engage the child's attention by asking a number of questions, thus checking cerebral inhibition and producing mental excitation.

The Gordon reflex is sometimes present in severe cases. This differs from the normal knee reflex in that the reaction is prolonged and the leg remains in extended position for a few seconds before dropping.

In severe cases the twitchings are so pronounced that the whole body is involved in the contraction. The child is unable to lie still and it is frequently necessary to pad the bed to prevent injury.

Sometimes only half the body is involved, constituting hemichorea. Sometimes there is loss of power on one side of the body or in the muscles most affected and the case resembles hemiplegia or poliomyelitis. The average duration of the attack is eight to ten weeks, but it may extend over a period of six months. There is a tendency to recurrence.

Chorea mollis: The limbs affected are limp. Chorea electrica: The contractions are short and light-ning-like.

Treatment: Even in mild cases it is best to remove the children from school. When there are fever and rheumatism, put the patient to bed and give salicylates. All severe cases should remain in bed. Drugs are of little avail, but arsenic seems to have some influence on the disease. It should be given in ascending doses.

Thus: Liq. Kali Arsenitis Aquæ Menthi pip. aa\u033i

Begin with I drop t. i. d.; then increase by one drop each day until 20 drops t. i. d. have been given; then gradually go down again, etc.

Thus: I-I-I
I-I-2
I-2-2
2-2-2

2-2-3 2-3-3

3-3-3, etc.

In the course of administration of arsenic, it is best to examine the urine at regular intervals; a trace of albumen indicates the limit of tolerance.

Epilepsy: Twelve per cent. of the cases occur during the first three years of life; 46% during the second decade. It seems to be more frequent in females, but the difference is only slight. Heredity is an important factor. There is usually a history of some nervous trouble in the family.

Infantile convulsions are a small factor in the etiology.

When there is predisposition to epilepsy the following may act as exciting causes: Sudden fright, excitement, falls, blows on the head, heat stroke, phimosis,

intestinal worms, adenoids, delayed menstruation, masturbation. Sometimes it appears after scarlet fever, measles or typhoid. It may also occur in syphilis, even without the presence of any lesions. Intestinal putrefaction, constipation and intestinal indigestion may be exciting causes. Epilepsy may be secondary to brain tumors, sclerosis, abscess of the brain, etc.

Always examine the urine for albumen to exclude uramia.

Symptoms: Grand mal—general convulsions.

Petit mal—attacks of unconsciousness
lasting a few seconds.

Children are usually mentally defective. The earlier epilepsy begins the worse the child's development.

The course of the disease is irregular. At first the attacks come at long intervals; later they become more frequent. The usual interval is two to four weeks. The attacks may come on daily. Sometimes the attacks come on in the night, and may therefore be overlooked for a long time.

General health is usually normal.

Death rarely occurs, unless from fall during the attack. Death may occur from status epilepticus, when the seizures follow each other in close succession, temperature rising to 105-6° and the patient dying from exhaustion or in a state of coma.

The nocturnal form may be recognized by the cry, biting of the tongue, blood on the pillow, spontaneous evacuation of the bladder and rectum, and headache in the morning.

Petit mal must be watched sometimes for a long time. The characteristic point is the momentary loss of consciousness, mental confusion, pallor, fixed stare, and sometimes evacuation of the bladder. Usually it is shorter than the ordinary fainting spell.

Epilepsy may be difficult to distinguish from secondary epilepsy (Jacksonian). In the latter the convulsion may be only partial, or if later it becomes general it always begins in the same group of muscles or we get a history of localization. We may get signs of hemiplegia or increased reflexes on the affected side. When convulsions begin suddenly and are accompanied by vomiting and later followed by the development of optic neuritis, it usually means brain tumor.

Prognosis: Depends on the severity of the case and frequency of the attacks. Petit mal may later develop into grand mal. Some cases seem to improve or even disappear under treatment.

Treatment: Bromides, especially strontium bromide 5-30 gr. t. i. d. continued for two or three years.

It is important to attend to the general condition and to remove all possible sources of irritation, such as constipation, indigestion, phimosis, adenoids, masturbation, etc.

Neurasthenia: This condition may be briefly characterized as a state of increased irritability of the nervous system, with diminished resistance to fatigue. The principal causes are: poor heredity, usually associated with improper and harmful environment and poor training. This may mean that the child is allowed to take part in the amusements of adults or he may be allowed to study too hard or to read improper books or he may get insufficient sleep or he is surrounded by absence of harmony at home or he is al-

lowed to partake of alcoholic beverage regularly. It may follow some severe illness or disturbance of nutrition. Sometimes children develop neurasthenia from over-energetic play, in which they are so interested, that they take no time to eat. These children are usually pale, cry and whine a great deal and suffer from frequent headaches. Whatever ailment the child may have is exaggerated. There is a tendency to egotism and hypochondriasis.

Treatment: Try to find out the cause.

The child should not be pampered and coaxed to eat when it has no desire for food. There is an inclination for parents to punish children for not eating. A child suffering from anorexia cannot derive any benefit from food that is forced down the throat. It merely causes the child to associate food with something very disagreeable.

Do not give the child any food, candy or fruit between meals and allow the child to eat as little as it desires at meals, and he will soon begin to eat normally. Do not cultivate the child's palate. He should eat, not because he likes the taste of some article of diet, but because he is hungry and is appearing his hunger.

Sometimes these children require a rest cure. This means that they should not be allowed to run around, skate, etc., but should rest quietly most of the time, and should eat their meals slowly. School children should be kept at home for a few weeks, and should not be allowed to read.

Sometimes it is wise to remove the child to a new environment, away from overanxious parents.

Migraine: This is a condition, characterized by periodical attacks of severe headache, with vertigo, nausea and vomiting. It is rare in children.

It is known to occur in children who are nervous by heredity. These children are "high strung" and sometimes possess unusual mental gifts.

It is most frequent during the period of puberty.

The pain is usually on one side of the head (hemicrania).

It may, however, affect the front or the back of the head.

The pain is always associated with nausea and vomiting, which is followed by sleep, after which the patient awakens much relieved.

This condition should not be confused with nervous headache, which some children get after too much excitement of any kind.

Tic Convulsive: A rhythmical involuntary contraction of a group of muscles.

It may affect the muscles of the face or the shoulder. When it affects the respiratory muscles it is in the form of a sob or sigh or a peculiar dry laryngeal cough. It may last for months or years or may even be permanent. When patient is observed the twitch is increased in frequency and intensity.

Treatment: A cure may be effected by transforming the involuntary contraction into a voluntary one. This is done by having the patient practice his own twitch in front of a mirror for an hour or two daily.

Torticollis (Wry neck): There is contraction of the sterno-cleido-mastoid muscle on one side. The muscles of the back, including the trapezius, may be affected. There may be a cicatricial contraction from burn. Sometimes it may be congenital, in which case it is due to malposition in utero. In the newborn there may be hæmatoma of the sternomastoid.

It may be caused by irritation of the spinal accessory nerve by an inflamed gland.

It may be associated with sore throat, peritonsillar abscess, retropharyngeal abscess, Pott's disease.

Acute cases coming on suddenly are caused by exposure to cold (rheumatic).

Malaria may be a cause, also chorea.

Treatment: Salicylates, quinine, when malaria; orthopedic head support. In bad chronic cases we may have to resort to tenotomy and myotomy.

Masturbation: In very young children, even in infants, we sometimes find that, owing to some irritation around the genital region, the child will acquire the habit of handling and scratching his genitals. This scratching will in time produce erection and evidently some pleasurable sensation. During the act the child's body is sometimes seen extended and rigid. The irritation may be due to lack of cleanliness, worms, adherent prepuce, etc. In treatment of these cases we first try to remove the cause. It may be necessary to tie the child's hands or attach some protective pad between his limbs. With repeated proper moral suasion, there is usually no difficulty in overcoming the habit.

Real masturbation, accompanied by sexual orgasm, is found in children as they approach puberty. It may begin accidentally when the child, while scratching his

genitals, is surprised by the occurrence of a sexual orgasm; or it may come through the instruction of a playmate.

Moderate masturbation does not do any harm. There is always danger of its becoming excessive, especially in children of neurotic temperament.

When masturbation is continued for a long time and is excessively indulged in, it will cause symptoms of neurasthenia.

Treatment should consist of proper and gentle moral instruction, and attempt to divert the child's attention to out-door exercise and harmless amusements.

Greatest harm may result from frightening the child too much as to the consequences of his bad habit. The fear of these may remain impressed on his mind for the rest of his life and have a harmful psychic effect.

Hysteria: This condition is rarely seen before the age of seven years.

Causes: Heredity (alcoholism, insanity, hysteria, anæmia or chlorosis in the parents), overpressure at school. It may follow infectious diseases, injury, fright, masturbation.

Symptoms: Nervous irritability, laughing and crying spells, fits of temper, capricious humor, night terrors, somnambulism, imitation of symptoms seen or read about. There is tendency to deception in most trivial matters, which may last for weeks.

Sensory hyperæsthesia, which may be so great as to simulate inflammation. There may be pain in the back of the neck, tenderness of the scalp, neuralgias in various parts of the body. We may also get attacks of gastralgia with vomiting. There may be loss of hearing or sight (of short duration). There is usually anæsthesia of the pharynx and conjunctiva.

Joint symptoms: These may simulate organic joint disease.

Deformities are greater than would be expected. The onset is sudden. The contractures are very slight or very prominent. There is hypersensitiveness of the spine and lower extremities. Pain and deformity increase upon examination. Under anæsthesia, contractures will disappear almost entirely. Other signs of hysteria are present.

May terminate in wonderful recovery.

Motor and convulsive symptoms: There may be tonic and clonic contractions of many varieties: hiccough, torticollis, hysterical cough, irregular respiration, vomiting, eructations, aphonia, local spasm of the face, mouth, eyes, dysphagia, hystero-epilepsy. There are areas which are painful and pressure may cause convulsions. Consciousness during convulsion is not fully lost and hallucinations are usually present.

Hysterical paralysis is not common, but may occur even in very young children as a result of some slight injury.

We may have disorders of secretion of saliva and perspiration. We may also have polyuria and incontinence.

General condition is usually poor. The children are generally anæmic, with poor digestion and capricious appetites.

Prognosis is better than in adults.

Treatment: Out-door exercise; nutritious diet; no

school; attention to the bowels. The child is better off away from its mother and overindulgent friends.

For joint trouble—Paquelin cautery, high frequency current, galvanism and hydrotherapy.

For hystero-epilepsy—Cold douche, pressure on ovary or testicles. Other conditions may require moral treatment or psychoanalysis.

Psychoses: Those found most frequently in children are defective psychoses.

Congenital mental defects are more common than acquired dementia.

Only dementia due to absence of thyroid secretion is amenable to treatment. There are degrees of mental defect. The worst cases may be classed as idiocy; the moderate cases as imbecility; whereas, those nearly normal may be called feeble-minded.

These cases require special training and instruction. The worst cases are best cared for in some institution.

MENINGITIS

In connection with this disease there are a number of diagnostic signs, which it would be well to define.

Tache cerebrale: Linear scratches of the skin will after about one minute result in hyperæmia of the scratch lines.

Babinski sign: Irritation of the sole of the foot will result in extension of the large toe, the normal reflex being flexion. This sign is not reliable during the first year of life.

Oppenheim sign: This sign is often found in connection with Babinski sign, the extension of the large toe resulting with pressure on the anterior group of muscles of the leg.

Macewen sign: In the presence of intracranial pressure percussion of the skull gives a distinctly tympanitic note. In normal infants percussion gives a slightly tympanitic note. We must, therefore, be careful in interpreting this sign in young infants.

Kernig sign: In the presence of intracranial pressure the legs are held in position of flexion at the knee; with the thigh at right angles to the body, it will be found impossible to extend the legs.

Brudzinski sign: Usually associated with the Kernig sign. When raising the head or the body, with patient lying on his back, the legs are involuntarily drawn up.

Technique of lumbar puncture: The body is placed

on a table on the side, with the back near the edge of the table. The body should be flexed and held in that position by an assistant. The lumbo-sacral region of the back should be painted with Tr. Iodine. Bichloride towels should be laid all around the field of operation, as well as on the floor next to the table.

A line tangent to the crests of the ilia will indicate the location of the space between the fourth and fifth lumbar spinous processes. This is the spot for the needle to enter. Now get a firm grip on the lumbar puncture needle, with the thumb, index and middle fingers, the handle of the stilet resting in the palm of the hand. Directing the point inward and slightly upward, push the needle in, with a sudden thrust, to the depth of 11/4-11/2 inches. Withdraw the stilet, and if the fluid drips out attach the little tube, raising it up. and holding it in a vertical position. To ascertain the amount of intraspinal pressure we measure the distance between the level of the fluid in the tube and the needle. Normally the fluid does not rise higher than 5 cm. above the needle. When the cerebrospinal pressure is high we usually draw off about 30-50 cc. of the fluid. During the operation have the patient watched closely, as the withdrawal of fluid may sometimes be followed by collapse.

If introducing serum (in the treatment of cerebrospinal meningitis), the amount used must not exceed the amount withdrawn. The serum is introduced slowly by gravity.

In doing the puncture we may accidentally injure a branch of the spinal venous plexus. This will result in the flow of bloody fluid or pure blood. If the flow does not clear after a half to one minute it will be necessary to withdraw the needle and puncture again in the space above.

After the lumbar puncture it is well to have the child lying with its head low.

Inflammation of the meninges may be classified according to the character of the infection.

The following varieties are generally encountered in the order of their frequency:

Tuberculous meningitis
Meningococcus meningitis (sporadic)
Pneumococcus meningitis
Staphylococcus meningitis, also streptococcus

Influenza meningitis.

Of common occurrence are also conditions known as meningism and meningitis serosa, in which there is a congestion of the meninges, without the growth of any specific bacteria. This condition often marks the onset of some infectious disease, the cerebral symptoms being more severe than usual. It is probably produced by the toxins of the disease. It has been contended that this condition may be an early and undeveloped stage of meningitis.

Meningism: At the onset of infectious diseases, particularly scarlet fever or pneumonia, the cerebral symptoms may be so strongly suggestive of meningitis as to mask the underlying condition. After three or four days these symptoms disappear and the real condition is then easily recognized. To make an early diagnosis it is necessary to do a lumbar puncture and make a laboratory examination of the spinal fluid.

The symptoms usually present are: Headache, restlessness, convulsions, delirium, rigidity of muscles of the back of the neck, contracted pupils; in infants, tense and slightly bulging fontanelles; Kernig sign.

Lumbar puncture shows the presence of high intraspinal pressure; the fluid is clear, sterile and does not show the presence of globulin or cytological changes.

The withdrawal of spinal fluid relieves the meningeal symptoms.

Meningitis serosa is a condition similar to meningism and is found sometimes associated with purulent otitis media; also with syphilis.

Tuberculous meningitis: Tuberculous meningitis is found most frequently during the spring months. Prevalence during this period is probably due to the fact that after the catarrhal diseases of the winter season the children often develop tuberculous lymph nodes, which are the usual source of infection. As a general rule the human bacillus is the offending organism.

The disease is not found in infants under three months of age.

For some months before the onset of the disease the child's condition seems to be below par. There is pallor, poor appetite, languor, headache and sometimes a slight rise in the afternoon temperature.

The onset is usually slow. It may or may not be marked by convulsions. There is a slight rise in temperature, loss of appetite, apathy, tendency to somnolence. Rigidity of the neck, Kernig, Babinski and Brudzinski signs gradually develop; there is also bulging of the fontanelles, with a positive Macewen sign. Tache cerebrale is also present. The pulse is irregular and unstable. Hemiplegia may develop early or late in the disease.

Ocular symptoms: At first the pupil is contracted, later the pupil is dilated, strabismus, fixed stare (ocular catalepsy), with absence of conjunctival reflex.

Ultimately the child drops into a state of coma with opisthotonos.

In the very young symptoms of cerebral irritation may be absent and general flaccidity is observed. Duration of these cases is short.

All cases show marked emaciation.

Von Pirquet reaction is usually positive but may be negative in some cases.

Lumbar puncture: High intraspinal pressure, clear fluid, contains globulin. Microscopical examination shows the presence of lymphocytes and tubercle bacilli. The latter are not easily found.

The average duration of the disease is two and a half weeks. The course may be shorter or may last several weeks.

Prognosis is very bad. A few seemingly authentic cases of recovery have been reported.

Meningococcus meningitis: This form may be either epidemic or sporadic.

There is an acute inflammation of the meninges, caused by the invasion of membranes by the diplococcus of Weichselbaum (Diplococcus intracellularis meningitidis).

The point of entry of infection seems to be the conjunctiva and the nasal mucous membrane.

Classification: 1. Ordinary-acute, chronic.

- 2. Malignant fulminating.
- 3. Mild.
- 4. Abortive.

- 5. Intermittent.
- 6. Posterior basic.

The onset of the disease is generally sudden, with fever and sometimes chills, severe headache, pains in the limbs, projectile vomiting.

The patient is somnolent and may develop delirium. There may be twitching of the muscles or general convulsions. There are some cases in which the onset is slow and intermittent. The pulse is rapid from the start and slows down only during the remissions of the temperature, thus differing from the pulse in tuberculous meningitis.

Soon rigidity of the neck develops, and the Kernig, Babinski, Oppenheim, Brudzinski signs may be elicited. The fontanelles become tense and bulging. The Macewen sign is positive. This sign is not of great value in very young infants, as normal babies often show a slightly positive Macewen.

Hyperæsthesia and hyperalgesia are regularly present. The child is irritable and any disturbance causes pain. Any attempt to raise the head is very painful. Hyperæsthesia is often followed by numbness.

Owing to the retraction of the head swallowing is very difficult.

Instead of rigidity of the muscles we may get paralyses either of the muscles of deglutition or of one or more of the extremities.

Paralysis of the bladder and rectum occur quite frequently.

The eyes may show conjunctivitis, keratitis, choroiditis. At first we get photophobia and contracted pu-

pils; later dilated pupils, insensibility to light, and also strabismus and ptosis.

Hearing is extremely acute during the onset, but later becomes dulled or lost. Sometimes otitis is present, which later may result in permanent deafness.

Head symptoms, restlessness, sleeplessness, delirium, coma, may be present in varying degrees.

Bowels are usually constipated, but later there may be diarrhæa with involuntary evacuations.

The pulse in children is usually rapid, but may be slow at the start. The temperature is usually high, but sometimes the temperature is irregular and the patient may be doing badly with a temperature of only 99°. In young children the temperature is high throughout the disease, but may drop just before death.

Sometimes there is an inflammation of the joints.

Some epidemics have been characterized by the appearance of a petechial or ecchymotic eruption.

Lumbar puncture: High intraspinal pressure; fluid is turbid; shows the presence of globulin, pus cells and meningococci, also lymphocytes.

Sometimes lumbar puncture results in a dry tap. This is due to occlusion of the foramen of Majendie. It is necessary, then, to get the fluid by means of a ventricular puncture through the anterior fontanelle. This, naturally, is possible only in infants under the age of two years. A very early puncture may not show the presence of the meningococcus.

Complications: Bronchitis, pneumonia, pleurisy, endocarditis, pericarditis, gastroenteritis, otitis.

Complications may make the diagnosis difficult, par-

ticularly in young infants, unless an early lumbar puncture is performed.

Sequelæ: Inflammation of the ependyma of the lateral ventricles will cause progressive emaciation, fever, alternating delirium and stupor. This condition may last several weeks and terminate fatally.

Other possible sequelæ are: hydrocephalus, blindness, deafness, aphasia, anæmia, hysteria, paralysis of several groups of muscles, chronic endocarditis.

Course of the disease: This varies according to the severity of the disease, the age of the patient and the treatment followed. In infants, under the age of two years, and particularly during the first year of life, mortality is very high. It is most favorable in babies who receive injections of the Flexner serum early in the disease but, owing to the delicacy of structure of the nervous system in infants, even early treatment is often unsuccessful. It is not uncommon for babies to die 24 hours after the onset of the disease.

The average duration of cases ending fatally is a week to ten days.

Treatment: Perform a lumbar puncture as soon as possible. If the spinal fluid is cloudy or if the clinical picture suggests cerebrospinal meningitis, it is best to be prepared to inject the Flexner serum, immediately after the puncture, without waiting for the laboratory report. 20-30 cc. are used. Two or three injections may be given at intervals of 12 to 24 or 48 hours, according to the severity of the case and the effect of the treatment. The treatment otherwise consists of proper nursing and stimulation, as the case demands. Bromides and chloral may be used as sedatives.

Pneumococcus meningitis: The onset is acute.

There may be headache for two or three weeks before the onset and the development of meningeal symptoms.

It may be associated with lobar pneumonia.

The outcome is almost invariably fatal in three or four days.

Lumbar puncture: High intraspinal pressure, fluid turbid or purulent, contains globulin, pus cells, diplococcus lanceolatus.

Sometimes the inflammation may be limited to the convexity of the cerebrum and the puncture will yield sterile fluid.

The blood picture is characterized by a high leucocyte count.

Staphylococcus and streptococcus meningitis: The disease is characterized by the presence of staphylococcus or streptococcus in the cerebrospinal fluid. It is otherwise similar to pneumococcus meningitis.

Otitic meningitis: May follow mastoiditis and sinus thrombosis.

Influenzal meningitis: The disease is usually associated with influenzal catarrhal conditions. Symptoms are very acute. It usually begins with marked constitutional symptoms, headache and convulsions. Pulse is rapid, temperature is high. There is rigidity of the neck, somnolence, delirium, stupor, coma. There may be vomiting and eye symptoms.

Lumbar puncture: High intraspinal pressure, fluid cloudy with straw-colored sediment; microscopical examination shows the presence of many polynuclears, and influenza bacilli (intracellular and extracellular). The usual duration of the disease is three to fourteen days.

The outcome is fatal.

The disease seems more frequent during the first year of life.

Cases of meningitis caused by Bacillus Coli Communis, typhoid bacilli and other bacteria have been reported.

DISEASES OF THE SKIN

Intertrigo: This is an affection found in infants, involving the skin around the pubic and anal region, as well as the inner aspect of the upper part of the thighs. It is caused by uncleanliness and acid stools.

The skin is uniformly red and inflamed.

Treatment: Proper attention to infant feeding and gastrointestinal disturbance. Cleanliness and no delay in changing napkins.

Locally we may use the following lotion:

Zinc. oxid. Glycerin aa3v Lac. Magnesia ad 3iv

This forms a white coating on the skin, which may be washed off with warm water. The lotion may be applied twice daily.

Eczema: This disease is of common occurrence, particularly in infants and young children.

It is caused by some nutritional disturbance. We find most frequently that the child is either overfed or is intolerant of some particular food.

At the outset the disease is acute, or subacute. It may be followed by recovery after three or four weeks, or more frequently it passes into the chronic stage.

The part most frequently affected is the face. The flexor surfaces of the extremities may be affected and sometimes some part of the trunk.

At the outset there is a sensation of itching or burning. This is followed by the appearance of redness of the skin. Upon this area small vesicles appear, which become numerous and which may coalesce. Soon the entire face, with the exception of the skin around the eyes and mouth, becomes covered with this eruption, and the skin looks inflamed.

The vesicles burst and the serous discharge dries and forms crusts, and finally the entire face assumes a crusty appearance. Some vesicles may not open, particularly near the edges of the area involved. These become pustular with surrounding infiltration. Itching is severe.

After a few days or weeks the discharge ceases, the subjective symptoms abate, the skin pales, scaling takes place, with gradual return to normal. The new skin retains a somewhat red and tender appearance for some time. In chronic cases we find, upon an erythematous, raw and weeping base, there is formation of crusts, which are composed of dried exudate of serum, pus, blood and epithelial débris. Later the inflammatory condition subsides and the skin becomes thickened and scaly.

Itching is intense and it is difficult to keep the child from scratching. No permanent scarring results.

Treatment: Constitutional treatment consists of the administration of a cathartic and strict attention to proper feeding. In chronic cases by careful exclusion of certain foods we may be able to get at the cause of the persistence of the disease.

Local treatment varies according to the stage of the disease.

During the acute stage use the following lotion:

Calamin 3i Zinci Oxidi 3ii Glycerin 3v Aquæ Calcis ad 3iv

For the subacute stage:

Acid Salicylici grv Zinci Oxidi 3ii Pulv. Amyli Maidis 3ii Petrolati 5i

This may be followed by:

Liq. Carbonis Deterg. ¶v
Zinci Oxidi aa
Glycerin āā3v
Lac. Magnesiæ ad 5iv
Or: Ol Rusci (Waldheim) ¶v-3ss
Ung. Zinci oxidi 5i

As healing progresses we may increase the strength of this lotion by increasing the quantity of Liq. Carbonis detergensis. Full strength, which is I drachm to the ounce, may be used when the skin is thick and scaly, as found in the chronic stage.

Sodium citrate and thyroid extract given internally seem to have a favorable effect in some cases.

Eczema orbicularis oris: This is an eczema around the vermillion border of the mouth.

It is caused by the habit of moistening the lip frequently or the use of strongly aromatic tooth paste. The skin is squamo-erythematous and has a tendency to crack. The symptoms are burning, itching and pain due to cracking.

Treatment: Application of Ceratum camphori compositum (Camphor ice).

Eczema seborrhoicum: The skin, particularly that of the face and scalp, is oily and there is a tendency to the formation of dandruff on the scalp. Adherent dirty yellowish scales form. These are composed of sebaceous material and epithelial débris. These are surrounded by an inflammation of the adjacent skin. On the face the disease is usually irregularly diffused; it may occur in oval patches of varying size. Attempt to remove the scales will cause bleeding, thus differing from the syphilitic affection of the scalp, which resembles seborrhæa, but is of a brownish or copper color.

Treatment: Soften scales with oil or vaselin or camphor ice. Then apply a 3-5% solution of resorcin in diluted alcohol.

Urticaria: This is a common affection in children. It may be caused by some gastrointestinal disturbance, some special food (strawberries, shell food, pork, cheese, pastry, oatmeal, candy, vinegar, sour wines). It may also be caused by drugs and antitoxins. Local irritation by insects, jellyfish, nettles, etc., is a frequent cause of the disease.

The condition is characterized by the appearance of wheals. These may be round, oval or irregular in form, and vary in size from that of a pinhead to that of spots two or three inches in diameter.

There is an ædema of the corium, resulting in the formation of circumscribed spots, which are pink or white in color and which are surrounded by a red area. In severe cases the ædema may go on to the formation of blebs (urticaria bullosa). Also in severe cases we

find that scratching will result in the appearance of wheals along the line of the scratch.

This is called dermographia.

Severe itching is a prominent symptom of the disease, and the consequent scratching aggravates the condition.

Any part of the skin may be affected, there being no special predilection for any particular location.

The usual duration is a few hours to a few days. Rarely we find cases which may last for months, causing much distress through constant itching.

Treatment: It is best to begin with thorough catharsis. This may be followed by the administration of mist. Rhei et Sodæ or Sodium citrate. For the relief of itching we may use a 3-5% resorcin solution in dilute alcohol.

Impetigo contagiosa: Contagious disease appearing on the exposed portions of the body.

Face and hands are usually affected.

There is a formation of vesiculo-pustule, which is soon surmounted by a central crust. This is at first surrounded by a red area. Later, however, the surrounding skin becomes normal and the drying pustule with the crust remains. A few spots usually appear on the face and one or more on the hands. The pustules are usually \(\frac{1}{4} - \frac{1}{2} \) inch in diameter. After the pustule bursts the crust may be removed and leaves a raw superficial ulcer, which heals without leaving a scar.

During the first few days fresh vesiculo-pustules may appear, but after that it is unusual for them to do so unless, owing to some concomitant itching disease, the child's scratches cause the spreading of infection.

Treatment: Remove the crusts with the aid of soap and warm water. Then apply Ung. Hydrarg. Ammon. 5% strength.

Molluscum contagiosum: The disease begins as a little nodule, the size of a pinhead. It is waxy and pinkish yellow. It is located most commonly on the face or genitals but may appear in other parts of the body, except the palms of the hands and soles of the feet.

These nodules grow until they attain the size of a pea. Later, they may become pedunculated. They are marked by a central depression from which cheesy material may be expressed. A few usually appear at a time. These may persist for months, or years, and finally disappear by absorption or become inflamed and discharge their contents.

The disease is contagious but the pathology is unknown.

Treatment: Curettage and touching the base with pure carbolic acid. Another form of treatment is by fulguration or 10% resorcin ointment.

Acne: Acne is generally associated with comedones. They are commonly found upon a seborrhoic skin about the age of puberty, and have a tendency to disappear around the age of thirty.

Comedones are commonly called blackheads. They are oblong masses of inspissated sebum obstructing the ducts of sebaceous glands. The exposed ends of these masses become pigmented and appear most frequently on the face, neck and back and sometimes on the breast. Sooner or later they become infected and

result in the formation of the acne papule and pustule. The papules do not necessarily suppurate, but remain indurated and are absorbed after two or three weeks. Suppuration results in rupture and discharge of a mixture of pus and sebaceous material.

The disease varies in degree of severity.

Treatment: Attention to general health. Daily scrubbing of the face with soap and hot water, and expression of the comedones. This should be followed by cleansing the skin with absolute alcohol.

The best lotion to use is:

Potassium sulphide
Zinc sulphate āā I drachm
Glycerin 3 drachm
Rose water ad 4 oz.

Pediculosis capitis: A condition of the scalp caused by the presence of the pediculus capitis (head-louse) on the scalp. This insect is about 1-3 mm. in length, translucent and grayish in color, except around the borders, where it is almost black. Immediately after feeding the body assumes a red tinge from the ingested blood. On either side of the body we find three strong, hairy, jointed legs, provided with curved hooklets. The flat, oval body is provided with seven segments, defined by deep lateral notches. The eggs, or nits, are minute gray or yellowish, shiny, pearshaped bodies, visible to the naked eye. Each is firmly attached to the hair with the large end projecting outward and towards the distal extremity of the hair. The eggs hatch in about one week and the parasite becomes mature in two or three weeks. The eggs are deposited near the roots of the hair. Thus the nits

furthest away from the scalp are the oldest. The parasite gets its nourishment by inserting its haustellum into a follicle, sucking up a small quantity of blood, causing a small punctate wound. As a result of scratching to relieve the intense itching, we may get secondary infections and enlargement of cervical glands.

Treatment: Soak the hair over night with Tr. Delphinium, or equal parts of kerosene and olive oil. In the morning wash the hair with soap and water, soak with dilute acetic acid, and fine-comb to get out the nits.

Pediculosis corporis: Resembles the scalp variety, but is somewhat larger and inhabits the underclothing, laying eggs in the seams of the garments. Itching is intense, especially on the neck and the back of the shoulders, around the waist and upper part of the thighs. Scratch marks on the back of the shoulders are characteristic. Scratching often results in secondary infection.

Treatment: Cleanliness of the body and clothing. Infected clothing should be boiled.

Scabies (itch): A contagious animal parasitic disease, caused by the itch mite (acarus scabiei), characterized by intense itching. The lesions are caused by the presence of the acarus in the skin and scratch marks. The lesion peculiar to the disease is the formation of burrows by the female acarus. This burrow is I/IO mm. long, straight, curved, or elevated, dotted with black specks. It lengthens, as the female mite continues to bore ahead, depositing eggs and fæces. In a well-developed case, numerous burrows may be found, and are seen most frequently in the interdigital

folds. The identity of these burrows is soon destroyed by scratching and they are converted into papules, which are often infected. The favorite locations of the infections seem to be: the flexor surfaces of the arms and wrists, dorsum of the hands, axillary folds, areola of the nipples, the abdomen, the penis and inner aspect of the thighs. Only in nursing infants are they ever found on the face. In infants they may also be found on the feet, especially the soles. The eruption is papular, but may become vesicular and pustular, especially on the palms of the hands. Infection may give some spots an impetigenous appearance. Itching is severe only at night, particularly when warm bedclothes are used.

Treatment: Have the patient soak in a hot bath one-half to one hour at bed-time, using soap and the scrubbing brush generously. After throughly drying the skin, apply Sulphur ointment, 10-20% strength. Leave this on all night and give a cleansing bath in the morning. Repeat this for three nights in succession. If after a few days some spots still remain, repeat the process once or twice.

A 25% ointment of Balsam Peru in vaseline may be used. Sulphur ointment used too often may result in a papular eruption.

Trichophytosis capitis (ringworm of the scalp, Herpes tonsurans): Found only in children. If untreated it usually clears up when patient reaches the age of fifteen. It starts as one or more somewhat scaly and perhaps slightly elevated spots. The hair on these spots becomes lusterless and fragile, and soon breaks off close to the level of the scalp. The long hair around the edges of the patch may be extracted

with little difficulty. The hair follicles may be somewhat elevated, giving the skin the appearance of gooseflesh. The patches spread slowly and may coalesce. There is no change in the color of the skin and no tendency to clear in the center, as in trichophytosis corporis. The disease sometimes becomes diffused. In rare cases the patches may become inflamed, pustular and crustaceous. Healing does not result in baldness.

Treatment: Ointment containing I drachm of iodine crystals to I oz. of goose grease. This should be rubbed into the patches with a soft tooth brush.

Trichophytosis corporis (ringworm of the body): Generally appears on the exposed surfaces, face, neck, and arms. It begins as a small, slightly scaly hyperæmic spot. This spot gradually grows peripherally at the same time becoming pale and scaly in the center, thus assuming the appearance of a ring. The advancing edge is elevated, and sometimes may consist of a succession of papules, or vesico-papules. Adjacent spots may merge, giving the lesion a gyrate appearance. In other cases new lesions appear within the old ones. Sometimes it reaches a diameter of four or five inches. Large lesions may remain stationary for a long time and then may disappear spontaneously.

Treatment: Paint the spot with Tr. Iodine, or apply vigorously a 10% ointment of ammoniate of mercury; or apply pure carbolic acid for a few seconds, and then remove it with absolute alcohol.

Favus: A contagious disease caused by a fungus, Achorion of Schoenlein. This fungus grows on the skin in pure culture, forming cup-shaped, sulphur-colored colonies, varying in size from that of the head of

a pin to that of a pea. These colonies are friable and mortar-like. The earliest lesion is a red patch, covered with gravish scales. These colonies appear as bright yellow specks at the mouths of hair follicles. Hair becomes lustreless and friable and soon falls out. The loss of hair is permanent. When the crusts fall off or are removed they leave a bleeding depression in the skin which ultimately heals and leaves a thin white scar. Colonies may coalesce and involve an extensive portion of the scalp, resulting in shiny baldness of the part affected. If untreated, the affection persists for a good many years. It seems more common in males, and usually begins before the age of fifteen. The infection may sometimes be carried to non-hairy regions of the skin. The affection has the characteristic odor of mice. The sources of infection are infected domestic animals, such as cats, dogs, birds, rabbits, horses, cattle, mice and rats.

Treatment: Remove the crusts with soap and water. Then an ointment of 3i of crystal Iodine to 1 oz. of goose grease should be well rubbed into the affected parts for at least a month; or for three months into the whole scalp. Before completing a course of treatment, watch closely for a possible recurrence, and renew treatment if necessary. It may take years before a complete cure is effected.

Pityriasis rosea (Herpes tonsurans maculosus): An acute mildly inflammatory disease, characterized by an eruption of small, rose-red, slightly elevated macules, many of which increase to coin-sized, round or oval patches. After the lesion has attained a moderate size, it becomes yellow, or salmon-colored, while the border remains bright red. The epidermis of the cen-

tral part of the lesion becomes dry and shiny, with fine desquamation, especially towards the periphery. Large macules sometimes clear up entirely in the middle. Lesions may coalesce and form large irregularly outlined patches. Most of the lesions usually cease to increase in size after about a week. They do not all attain the same stage of development. Fresh lesions generally cease to appear after one or two weeks. The lesions are very superficial and there is no infiltration of the skin. The eruption usually appears on the trunk, but may also appear on the neck, arms and thighs. As a rule it is not found on the face, or below the knees.

Occasionally we find that one spot will appear four to twelve days before the general eruption.

There may be a moderate amount of itching, but usually only when the skin is moist with perspiration.

The eruption persists for three to six weeks, or longer.

The disease is common in the young and very unusual in older individuals.

Treatment: Recovery is usually spontaneous. It may perhaps be hastened by the use of a 5% ointment of sulphur.

Ichthyosis: This is a congenital dryness of the skin, resulting in desquamation, which may vary in severity from furfuraceous to plate-like scales. It may not be noticed for one or two years after birth. It is often hereditary.

Treatment is of little avail. Some improvement may be obtained by the use of frequent warm baths and inunction of lanoline.

Dermatitis exfoliativa (Pityriasis rubra): Derma-

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titis exfoliativa begins upon any part of the body, but usually in the flexures about the joints, as patches of erythema which spread and coalesce. New patches appear and follow a similar course until the whole surface of the body may become involved. The onset is often with a rise of temperature and a more or less pronounced fever may be present throughout the course of the disease. After a week or ten days, desquamation begins. The scales are either small and bran-like or in the form of thin flakes which are often so plentiful that a handful can be collected from the patient's bed or clothing. The thicker epidermis of the palms and soles is sometimes cast off in the sheets. exposing a dry, vivid red and shiny surface. The affected skin is not at first palpably infiltrated and even in the later stages the infiltration is seldom pronounced. The patches are at first rather a bright red, but soon acquire also a yellowish or brownish hue from the deposit of pigment. The scales are usually dirty gray. Skin infections, pustules and boils are not uncommon complications. The sensibility of the skin remains intact, but there are generally subjective symptoms of tingling, smarting, burning, or pain; itching is less common. Cases of dermatitis exfoliativa vary greatly in extent, severity and duration. The mildest may remain localized and run a short course of only a few weeks or months. At the other extreme are the cases usually described as pityriasis rubra, which invariably terminate fatally. Most cases eventually become universal, though the time required varies from a few days to a couple of years. Recovery is the rule, but convalescence is usually protracted and recurrences are frequent. A few cases progress to a persistent

universal dermatitis from which the patient never recovers. In the advanced stage of the severe form the skin appears shrunken and tense and may be fissured about the joints. The nails are distorted and the hair is shed. The buccal mucous membrane becomes red, and cracked upon the lips.

Symptoms develop which may indicate involvement of the internal tissues, i. e., vomiting, diarrhœa, albuminuria, bronchitis, arthritis, etc. The patient dies of exhaustion or some intercurrent disease. Not infrequently dermatitis exfoliativa follows an attack of psoriasis, eczema, pityriasis rubra pilaris, lichen planus or dermatitis venenata, but once developed this secondary form is clinically indistinguishable from the idiopathic variety and runs a similar course.

Treatment: General tonic treatment is indicated and externally the blandest preparations, such as petrolatum, to which one-half per cent. carbolic acid may be added.

Erythema nodosum: An inflammatory affection, marked by the appearance of erythematous nodes, varying in size from one-half to two inches in diameter. The appearance of the rash may be accompanied by constitutional symptoms of rheumatic fever, with swelling and pains in the joints. The skin lesions develop rapidly and symmetrically on the extensor surfaces of the legs. Sometimes they may also appear on the thighs and the upper extremities. The lesions are not numerous, only a few appearing. The lesions are at first bright red and indurated and painful as well as sensitive to the touch. The border is never distinctly defined, but merges gradually with the surrounding skin. The nodes have a tense appearance and after

a coupie of days assume a purplish color. After a few days the spots turn green and yellow. The entire course of the lesion is like that of an ecchymosis. During resolution, the nodes may show fluctuation, but abscess formation and ulceration never results, the nodes being slowly absorbed.

Duration of the disease is usually two to four weeks, but new crops may appear, prolonging the affection to two or three months. They may be associated with other lesions and form a part of the symptom complex known as purpura rheumatica.

Treatment: Internal administration of salicylates, rest in bed. For painful nodes, we may use a wet dressing with Liq. Aluminii acetatis.

Dermatitis venemata (ivy poisoning): This is a form of irritation caused principally by contact of the skin with a plant called Rhus Toxicodendron, or poison ivy. Other substances, such as drugs or dye stuffs, may produce a similar effect. There is a difference in susceptibility in different individuals, some not being susceptible at all. The skin which comes in contact with the leaves is affected. The hands may transfer the poison to other parts of the body.

The symptoms develop after a few hours. At first there is a feeling of warmth and itching, then the skin becomes erythematous and swollen. Sometimes wheals appear. The inflammatory symptoms gradually increase, and the burning and itching become intense. The erythematous skin becomes covered with minute discrete vesicles, which rarely become confluent. After a few days the acute inflammation subsides, the skin becomes pale and covered with crusts, which ultimately drop off without any scar formation.

Treatment: The substance that causes the irritation is soluble in alcohol, and is precipitated by lead acetate. The exposed surface should, therefore, be bathed with a saturated solution of lead acetate in alcohol. The parts which have already become inflamed should be treated by the application of calamin and zinc oxide lotion.

Ecthyma: A pyogenic infection of the skin, characterized by the eruption of deep-seated pustules, with markedly inflammatory and hard, bright red bases and areolæ. Each lesion starts as a papule, or more frequently as a flat, not fully distended pustule. This is followed by considerable infiltration and formation of slightly bloody pus. The head of the pustule becomes covered with crust, which later drops off and leaves a crater-like ulcer with bluish and elevated edges. The ulcers heal after a few days and leave pigmented scars. New crops appear, prolonging the course of the disease. Only a few pustules appear at a time. They are usually seen on the legs and sometimes on the upper part of the back and also the arms. The constitutional symptoms are insignificant. The disease occurs in debilitated children.

Treatment: Cleanliness and Ung. Hydrarg. Ammon. (5-10%). Remove the crusts.

Erysipelas: An acute contagious dermatitis, caused by infection with the Streptococcus pyogenes (Erysipelatis). The infection enters through some abrasion in the skin.

The appearance of the rash is preceded by malaise, headache, vomiting, chills and fever, which may precede the skin lesion twenty-four hours. We first notice a coin-sized patch, peculiarly smooth, shiny and red,

with a well-defined border, which is usually elevated. The lesion is hot and tender and causes burning, pain or itching. The redness is rosy at first, later becoming crimson. It disappears on pressure, but leaves a somewhat yellowish tinge.

The patch may retain its original size, but more frequently it spreads peripherally. In cases of moderate severity, the inflammation continues for about a week, accompanied by constitutional symptoms, the temperature ranging between 103-106°. With resolution, all symptoms disappear, the skin becoming pale and desquamating, with gradual return to normal. In severe cases, vesicles and bulke may form. Their contents usually become purulent and result in crust formation.

Occasionally there is a deep infiltration and gangrene of the skin.

Erysipelas migrans has a tendency to spread rapidly and may even extend to the mucous membrane of the mouth, larynx and lungs and possibly to the meninges. These cases are generally fatal. In a well developed case, the skin is red and very much swollen and death may occur from exhaustion, toxæmia, septicæmia, or metastatic abscesses. The condition is not uncommon in the new-born, the point of entry of infection being the umbilicus.

Treatment: Local application of ichthyol ointment, or 25% solution. We may paint the borders of the red area with Tr. Iodine, 5-10%. Potassium Iodide (10%) may be added to the ichthyol ointment.

TABLE OF WEIGHT AND HEIGHT

Age	Av	Average weight		Average height	
At birth		-			inches
3 months		12	"		
6 "		16	66		
9 "		$17\frac{1}{2}$	66		
12 "		20	44	29	inches
2 years		26	66	32	ω.
3 "		30	66	35	66
4 "		35	66	38	66
5 "		39	66	41	66
6 "		43	66	44	46
7 "		47	66	46	"
8 "		52	66	48	66
9 "		5 <i>7</i>	66	50	66
10 "		62	66	52	"
II "		68	"	54	"
12 "		73	"	56	66
13 "		79	66	58	46
14 "		88	"	61	66
15 "		103	66	63	66
16 "		114	66	65	66



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